

MOTOR AGE

Vol. XXIX
No. 19

CHICAGO, MAY 11, 1916

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R. D. CHAPIN

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A stylized, handwritten signature of R. D. Chapin.

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MOTOR AGE



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Volume XXIX

May 11, 1916

No. 19

C o n t e n t s

VOYAGE OF THE "HANNAH MARIA".....	5
Two lovers of adventure rough it across continent and back	
"THOSE FLAG, HE MUST COME DOWN," SAYS CARRANZISTA....	11
Old Glory ordered off hoods of cars in Mexico	
EDITORIAL—PEDESTRIANS AND TRAFFIC—THE 24-HOUR ENDU- RANCE RUN—GREAT BRITAIN'S LICENSE LAW....	12
MOTORIST VS. MOTORCYCLIST COURTESY.....	14
Latter seeks only fair treatment from the former	
HUGHES WINS 100-MILE COAST RACE.....	16
Drives Mercer 61.6 m.p.h.—Good, second—Rhodes, third	
HILL TAKES GARDENA ROAD RACE.....	17
Drives Chevrolet to victory in first event	
CHANGES MADE IN MAXWELL RACING CAR DESIGN.....	18
Four machines will be in readiness, but only two in races	
SPEED TRIALS AT SHEEPSHEAD BAY.....	19
De Palma ruled out of Hoosier sweepstakes	
SPECIAL PRIZE FOR FASTEST LAP ON CHICAGO SPEEDWAY.....	20
Reid hangs up purse—Trials must be under A. A. A. supervision	
BRITAIN ASKS THAT CARS BE NOT USED FOR PLEASURE.....	22
John Bull needs his gasoline to run motors in entertaining Mars	
CITY INSPECTS GASOLINE.....	24
Los Angeles protects public from doping evil at fuel stations	
MOTOR CARS IN SHAM BATTLE.....	24
Touring car battalion participates in defense maneuvers	
TIRES, THEIR CARE AND REPAIR—PART VI.....	26
Attention to alignment of wheels prevents excess wear	
CIRCLING MOUNT HOOD IN A MOTOR CAR.....	30
On this trail one passes through both frigid and temperate zones	
MOTOR CAR DEVELOPMENT.....	38
Crow announces two models of 1917 series—Standard Detroit tractor at \$1,065	

DEPARTMENTS

See America First.....	13	From the Four Winds.....	42
Readers' Clearing House.....	34	With the Makers and Dealers..	44
Repair Shop.....	36	Book Reviews.....	46
Accessory Corner.....	40	Index to Advertisements.....	134

ANNUAL TOURING NUMBER NEXT WEEK

Motor Age's Annual Touring Issue, which will bear the date of May 18, will offer the most comprehensive study of America's tourgrounds ever given the public in one issue of any magazine. In planning your summer tour, no matter in what part of the United States you wish to go, this issue will give you a graphic picture of that individual section, and tell you how to get there and what to see. To present the information involving many satisfactory tours in such way as to be available for every subscriber's requirements the United States has been divided into fifteen touring areas, such as The Mountains and Lakes of New England—The Shenandoah Valley—The Yellowstone—The Yosemite Country, etc. Each of these areas will be featured by story and photographs, together with local maps.

Last Call!

Advertising Forms
for the Second
Annual Touring
Number of

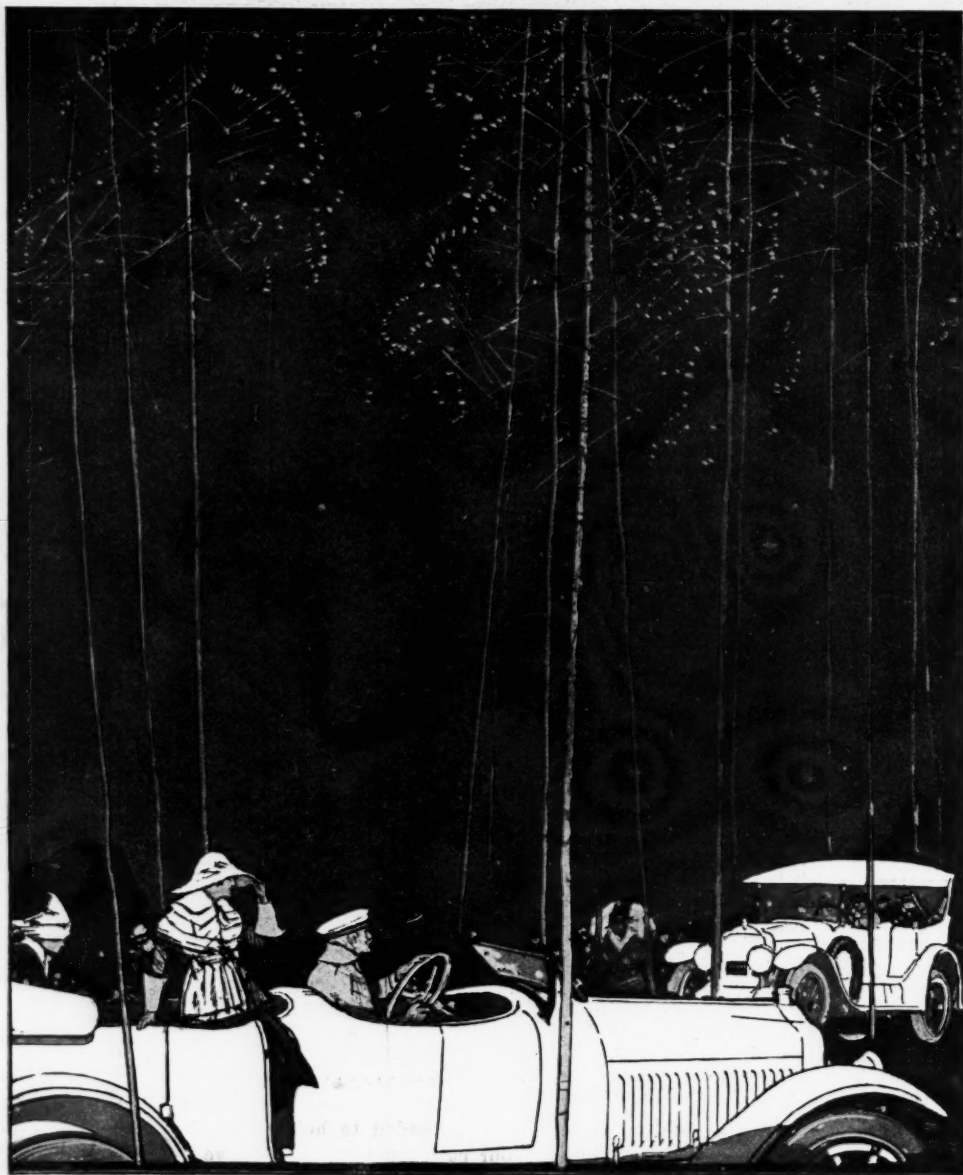
MOTOR AGE

**Close
Monday
May 15th**

See Page 98, ex-
plaining this re-
markable issue in
detail.

**Rush Copy
Saturday
May 13th
—Sure—**

MOTOR AGE
Mallers Bldg., Chicago, Ill.



White

Custom Built



The beauty of the White touring body has been so marked during the past year that more than a score of makers are attempting to imitate some of its distinctive features, the center cowl, for instance. But the charm of the White center cowl can not be divorced from its setting. It is the effect of harmonious proportions and of graceful lines sweeping to and from it. To vary its width or height or curve is to lose the effect. If the White contour were not copyrighted and could be paralleled in its entire design, the result would still be inappropriate without the high quality materials and costly hand labor which enter into White body construction. In specifying the upholstery and finish of White bodies each owner is afforded an opportunity to express his individual taste.

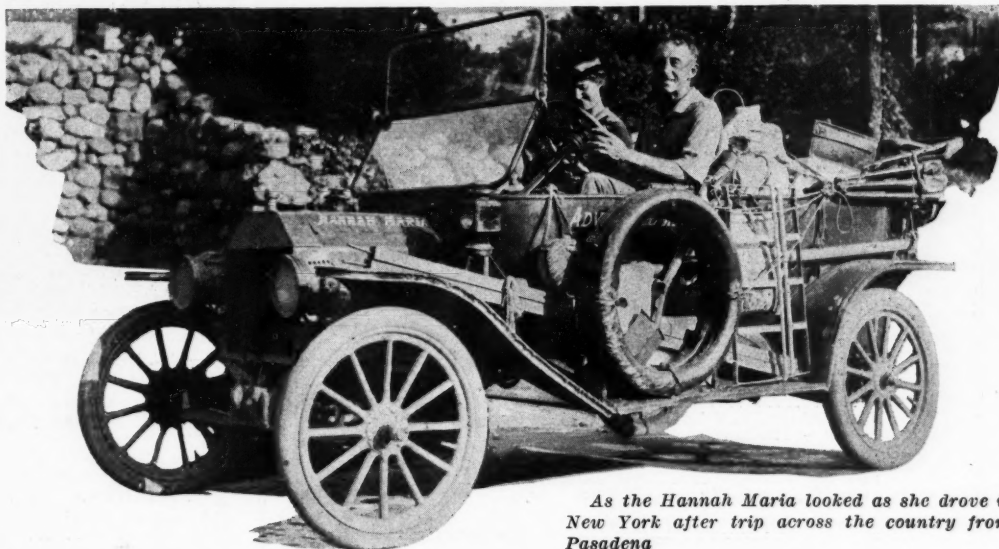
THE WHITE COMPANY

Cleveland, Ohio.

MOTOR AGE

Voyage of the "Hannah Maria"

Two Seekers of Adventure Rough It
Across Continent and Back



As the Hannah Maria looked as she drove in New York after trip across the country from Pasadena

"WHY the twinkle?" said the Little Woman, as she blew jauntily into my office one spring day. For answer I handed her the request just received from a well known motoring magazine for a series of articles on transcontinental motor camping. Her eyes began to snap as they ran along the lines, in fancy she already was scaling the Rockies, and relating her experiences and hair-breadth escapes to her eastern family and friends.

"Bet you a dinner," she exclaimed, "that I get the camping kit in order before you can overhaul the car."

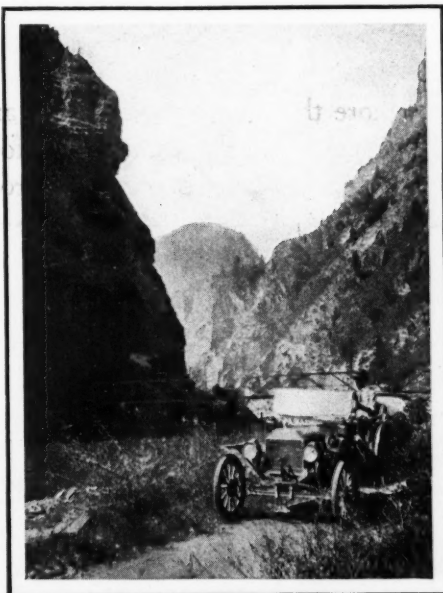
"Done," I answered, and was grinding my sixth valve before it dawned upon me, that no matter who won, I would be paying for that dinner anyway.

Delving in the Attic

The stage setting for the next scene was in our attic, where, spread before us, lay our camping equipment—tent, cots, bedding, chairs, table, cooking kit, grub box, spade and hand axe. All had seen service in the Mojave Desert, in the Big Trees, and at Lake Tahoe, but for all that it was in good order, complete, and seemed actually eager again to take up its accustomed duty on the camp firing line.

By J. Constantine Hillman

We next proceeded to hold a dress parade of our camping raiment, followed by a careful inspection of each article. There



Canyon of the Grand between Glenwood Springs and Walcott, Colo.

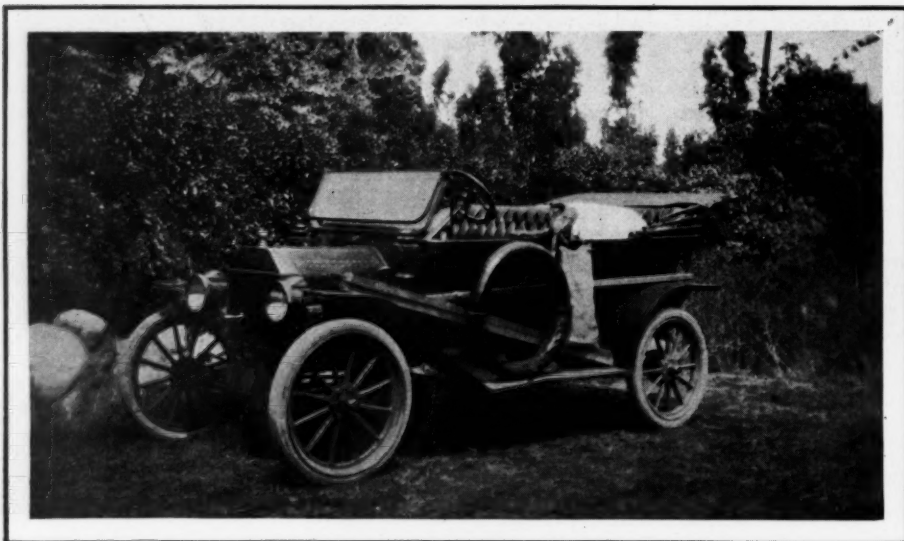
were khaki for the desert heat, and corduroy for the Sierras and Rocky Mountain going, underwear and footwear to suit both conditions, nothing that buttoned down the back, nor had to be ironed, and the whole contained in one masculine and one feminine suit case—no more.

During the process of overhauling each article, strengthening buttons, mending tears, and patching thin places, the Little Woman gave an exclamation and clapped her finger into her mouth. The barb of a forgotten hackle, concealed behind the lapel of a coat, had made another catch—and its last. The next instant it was in the fireplace.

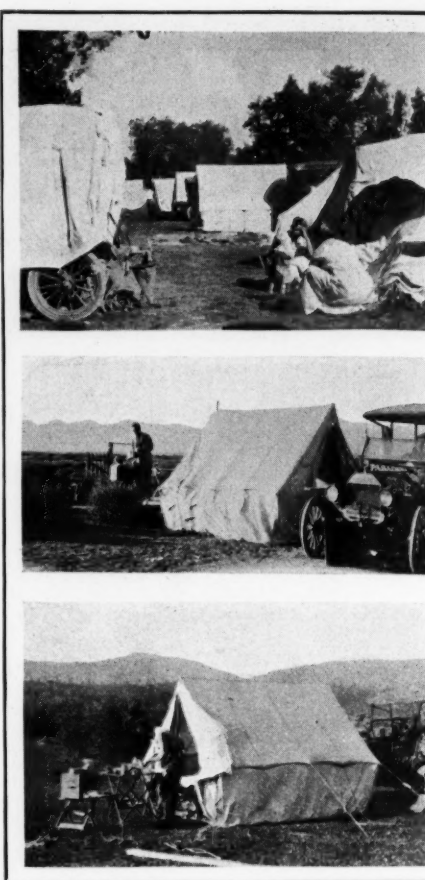
An Untimely Catch

During this period the family atlas was worked overtime. Joseph's coat didn't have anything on Uncle Sam's pink and green, yellow and blue family of states that we must find our way across and many conditions must be considered therewith.

We would be crossing during the latter part of July, all of August, and, perhaps some of September. We must be in our Pasadena home before the middle of November, hence we must return by way of a route sufficiently south to be safe from



The car and equipment loaded ready for the trip



Top—Thirty-two campers in one place in the west. Middle—The Hillman camp at Halleck Station, Nev. Bottom—The Hillman camp at Twin Lakes, between Leadville and Granite, Colo.

early winter storms and snow blockades in the passes; consequently the going route resolved itself into a combination of such northern routes as would enable us to make an interesting and attractive crossing.

For me the trip was primarily to be a complete vacation from the exactions of my profession. For the Little Woman, a complete separation from the

insistent demands and requirements of the children. For both of us, the opportunity to see and study the many aspects of our broad United States.

The secondary object of the trip was to satisfy ourselves at first hand relative to the merits upon which certain transcontinental highways based their claims for motoring patronage. We could cover but two highways on this expedition, going

DIGESTED SUMMARY GOING EAST, JULY 29 TO SEPTEMBER 4

	Miles	Days	Nights	Hours running time	Outlay
Pasadena to Oakland...	465.3	3	2	26½	\$ 14.78
Panama Pacific Expo...		3	4		28.61
Oakland to Salt Lake City	929.7	9	8	70 5/6	34.70
Salt Lake City.....		1½	2		10.36
Salt Lake City to Glenwood Springs	430.6	4½	5	32¾	17.61
Glenwood Springs		2	3		4.05
Glenwood Springs to Denver	304	4	3	24	29.45
Denver		2½	3		25.57
Denver to Chicago.....	1,216.4	9½	9	74 5/6	21.21
Chicago		2½	3		.10
Chicago to Malden, N. Y. 1,042.6		8½	8	60¾	27.34
Malden - on - Hudson, N. Y.		7	8		6.07
Balden to N. Y. City....	107.4	1	0	6½	.94
	4,495.9	58	58	296	\$220.79

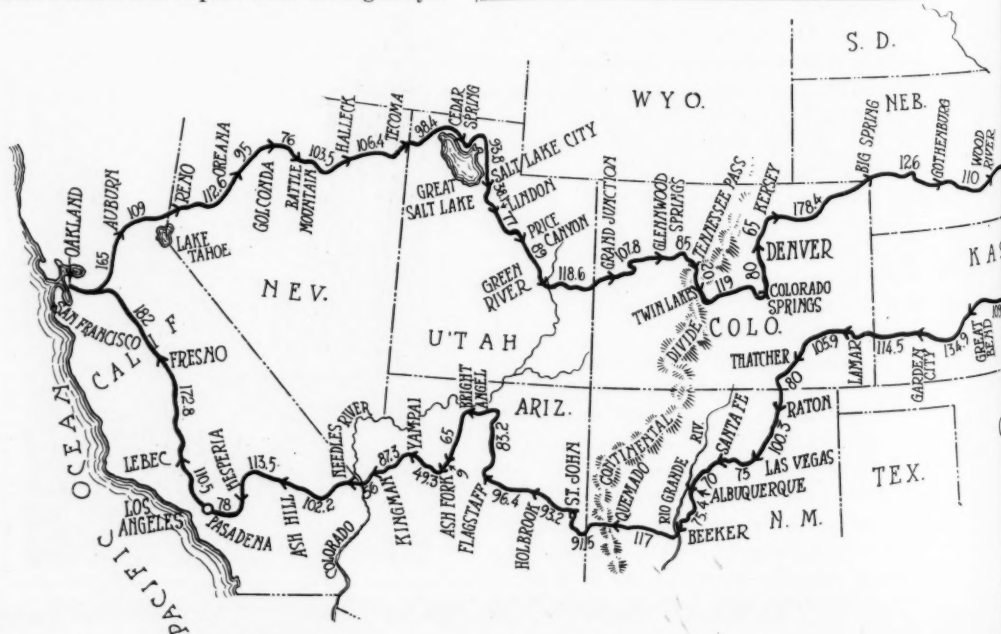
and coming; but their publicity departments had worked to such purpose upon the motoring public that, in our own case, the interest aroused had progressed through various stages until it had become a burning curiosity, only to be satisfied by actual contact and impact with the highways.

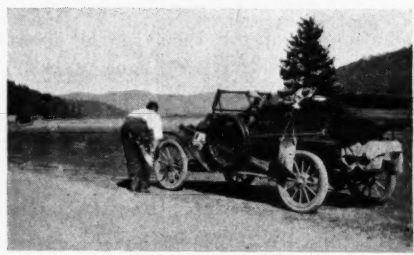
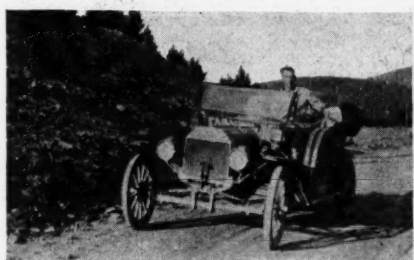
PASADENA TO NEW YORK

214 gal. of gasoline.....	\$ 34.47
14½ gal. of oil.....	9.13
Car adjustments and repairs...	52.01
Garage charges	4.50
New inner tube.....	2.90
Vulcanizing50
Repairs to casings.....	2.50
All provisions	68.10
All hotel accounts.....	19.75
Kodak work	12.43
Ferry and tolls.....	.98
All other repairs.....	13.52
Total	\$220.79

GASOLINE PRICES Going East

Pasadena, Cal.....	10½
Oakland	12
Auburn	20
Reno, Nev.....	18
Battle, Mo.....	20
Elko	25
Kelton, Utah.....	30
Salt Lake.....	15
Green River.....	25
Glenwood Springs, Colo.....	21
Ft. Morgan.....	15
Denver	13
Big Springs, Neb.....	15
North Platte.....	13
Grand Island.....	11
Des Moines, Ia.....	11
Grinnell	10
Clinton	12
Ashton, Ill.....	12
Chicago	11
South Bend, Ind.....	10
Woodville, O.....	12½
Norwalk	12½
Harbor Creek.....	15
Buffalo, N. Y.....	16
Rochester	18
Little Falls.....	18





Top—Summit of Tennessee Pass, in Colorado, elevation 10,430 feet. Middle—Along the shore of Elizabeth Lake in Colorado. Bottom—Repairing the only puncture in the 4,000-mile trip at Donner Lake in the Sierras

NEW YORK TO PASADENA

165½ gal. of gasoline.....	\$ 28.92
18½ gal. of oil.....	10.55
Car adjustments and repairs...	40.78
Garage charges	5.50
Set of new casings.....	46.40
Vulcanizing	2.85
All provisions	59.33
All hotel accounts.....	21.40
Kodak work	8.71
Ferry and tolls.....	8.91
All other expenses.....	10.22
Total	\$243.57



The Hannah Maria and camping equipment before loading. The man at the wheel, age 15 months, not included in the equipment

DIGESTED SUMMARY GOING WEST, SEPTEMBER 26 TO NOVEMBER 13

	Miles	Days	Nights	Hours Running Time	Outlay
New York City.....		1	2		\$ 14.46
New York to Scranton. 145		1	0	9	3.26
Scranton		1	2		3.08
Scranton to Rochester, 223.6		1½	1	13½	4.80
Rochester, N. Y.....		4½	5		31.08
Rochester, N. Y., to Columbia, Mo.	1,047.8	9	8	63	41.94
Columbia, Mo.		1½	2		9.10
Columbia to Kansas City 162		1½	1	9½	2.80
Kansas City		½	1		24.13
Kansas City to Grand Canyon	1,544.6	15½	15	103½	65.02
Grand Canyon		4½	5		27.46
Grand Canyon to Ash Fork	74	1	1	9	.44
Ash Fork		1	1		6.09
Ash Fork to Pasadena. 486.3		5½	5	34½	24.37
	3,683.3	48	47	242	\$243.57
Grand total	8,179.2			538	\$478.82

The prospect of roving all the expanse from the Pacific to the Atlantic was as attractive as the Arabian Nights. There were mountains and plains, forests and deserts, in all altitudes, up to 2 miles;

unbiased openmindedness, to be receptive, tolerant, and perhaps, most important of all, preserve our sense of humor undimmed. There are many things which arise during a trip that may be discouraging, but overlook them.

At the very outset we cast aside any idea of running so many miles per day because we would not be circumscribed by

GASOLINE PRICES Going West

Newark, N. J.....	18
Scranton, Pa.....	16
Ithaca, N. Y.....	17
Collins Center.....	20
Cleveland, O.....	13½
Chicago Junction.....	15
Indianapolis, Ind.....	13
Plainfield	14
Decatur, Ill.....	12½
Jacksonville	13
Ladonia, Mo.....	14
Mexico	13
Kansas City.....	11
McPherson	15
Great Bend.....	12
Dodge City.....	14
Grinada, Colo.....	15
La Junta.....	18
Trinidad	17½
Santa Fe, N. M.....	25
Albuquerque	22
Magdalena	30
Springerville, Ariz.....	30
Flagstaff	25
Grand Canyon.....	35
Needles, Cal.....	25
Ludlow	18
San Bernardino.....	15



On this and the opposite page is a map made by the author of this article, showing the camping sites for every place they stopped while en route on this long trip. This is a more comprehensive camping map than is usually found for such a long trip, and it would be well to preserve it for future use

the limitations of a schedule. We would simply stick to our knitting and unreel as many miles as that included. Likewise, we would not be fettered by the conventionalities of hotel life, and our camping preparations included everything requisite to making camp whenever and wherever darkness overtook us. These features we carried out to the very letter and we found them all they promised to be.

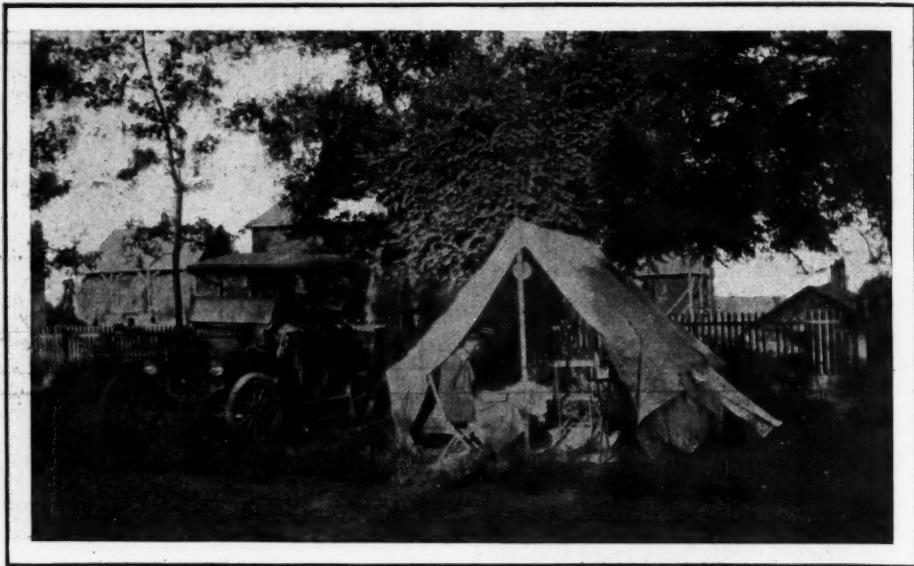
Value of Preparedness

The value of preparedness has a direct bearing upon the degree of success of any undertaking, and we tried to insure our sightseeing time against diverting influences by having the car thoroughly overhauled, and equipping it the day before our departure with a complete new set of high-grade tires.

There were several important features of the trip, however, that we could obtain no satisfactory information about. One of these was the probable expense. Many there were who had gone before; but we could discover none who had made the crossing in the manner we had elected to follow, and their hazards at our prospective outlay were too widely diverging to be of the slightest use. We knew approximately how many miles we would travel, how many miles per gallon we usually got out of the car, how many miles we averaged per day in the large, but the matter of tires, repairs, fluctuating prices of gasoline and oil, added such a large element of uncertainty that we simply took a running jump at the outlay on the basis of average roadside luck, and let it go at that.



Where the Hillmans camped at Glenwood Springs, Colo.



Camping in a village lane near Lindon, Utah

We were turning away from our fully loaded car, on the day previous to our departure, when some friends drove up in a big touring car, and when they were informed that we proposed starting in the morning on a motor camping trip to New York, there was an explosion of advice and criticism that covered the entire range of the calamities, and when we further told them that our equipment did not include any spare parts or medicines, their unfettered remarks extended into the realms of prophesy as to the sort of secure institutions we properly belonged in on this earth, and our ultimate destination in the next. Long and earnestly they looked at us in parting, pretty much as if we hitched our little wagon to the tail of a comet.

The morning of our departure dawned upon a cloudless sky and, as we pulled the door to behind us, we looked with more than passing interest at the familiar outlines of our little California home, and realized, in a prophetic way, that much was to be revealed to us before we again stood within its friendly shelter.

The conditions under which we were embarking were singularly auspicious. We were not obliged to confine ourselves to any route or schedule. We had no axes of any sort to grind, nor any prejudices to overcome. The siren songs about the Lincoln highway and the National Old trails had accomplished their mission, we would take them at their own

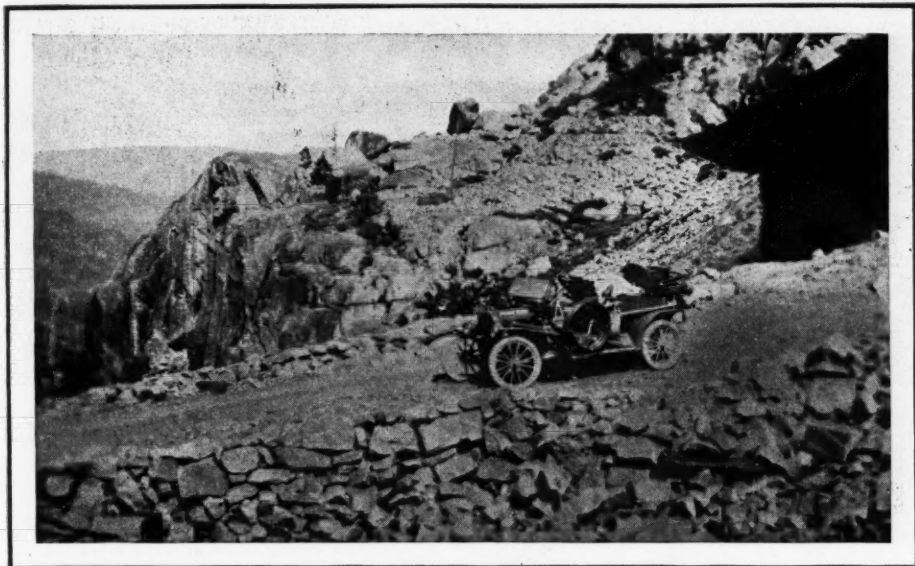
valuations, and try them in the fires of our own experiences. Our snug little home lay in sight of the Pacific, our destination was a long way off, and all between was ours to range.

Only when we headed out into the open country did we fully realize the unusual and wonderful opportunity that lay before us. Neither of us had ever been over the ground. Could there be anything fresher and crisper than the thought that each day, each scene, every inch of the going, would be absolutely new to us, and somewhere, some place, at the end of each of these wonderful days was a spot, yet unknown, that we would adopt for our very own, erect our shelter upon, move in, and give to it all the aspects of a temporary home for the night or several nights, if occasion demanded? There is a fascination, a glamour about the new scenes of the day to come that, to the open country camper, possesses all the magnetic properties of the polar star.

The Start

We rolled out of our driveway in Pasadena Thursday morning, July 29, 1915, and late afternoon of the Saturday following found us among the sightseers at the Panama-Pacific exposition in San Francisco. Our route carried us across the Tehachapi mountains and up the San Joaquin valley, a distance of 465.3 miles, almost all over completed state highways and in 26½ hours of running time.

At this juncture it might be well to lay violent hands on the family atlas and a calendar for 1915, for it may assist and interest the reader to pace and time us across the next section of this narrative, which deals with the United States in general, and the various states in particular, beginning with the map of California. While so doing, bear in mind that we are relating our own experiences, just as they occurred, and from the elevated viewpoint of unbiased spot cash, by which is meant that we paid as we went in money that



Grade beyond last snowshed leading to Donner Lake in the high Sierras, California

did not have to be bitten, and we naturally felt entitled to some similar standard of excellence in what we received.

After seeing, studying and thoroughly enjoying the manifold attractions of the Panama-Pacific exposition we started eastward, leaving Oakland on Wednesday morning, August 4, and proceeding via Sacramento, Auburn, Emigrant Gap and Donner Lake, we were easily able to reach Reno, Nev., Thursday evening, August 5, 274 miles from Oakland. At Reno we were strongly advised to go to Salt Lake City via the north-of-the-lake route. Accordingly, we left Reno Friday morning, August 6, and arrived in Salt Lake City Thursday afternoon, August 12, 655.7 miles from Reno. En route we were delayed a half day at Battle Mountain by a broken front spring.

Stop in Salt Lake

Some time was spent in Salt Lake City visiting friends, seeing the sights, and getting tanned to the popular dill pickle finish, which reaches its ultimate perfection at Saltair, on Great Salt Lake.

The next leg of our journey carried us from Salt Lake City to Glenwood Springs, Colo., via the Midland trail, over to Soldier Summit, through Price canyon, and along the foot of the Book Cliffs, to Green River and Grand Junction. Thence the trail leads up the Grand River and Plateau Creek canyons to Glenwood Springs. We left Salt Lake City Saturday afternoon, August 14, and pitched our tent just back of the great hot springs bathing pool in Glenwood Springs, Wednesday afternoon, August 18, 430.5 miles from Salt Lake City. It was an attractive spot, and from morning until night—and well into the night—that pool was full of laughing and shouting people. It was a privilege just to be one of them, and we heard more whole-hearted, spontaneous mirth hereabouts than in any camp we ever made.

Resuming our journey we left Glenwood Springs for Denver Saturday, August 21, high

surmounted the Rockies via the Tennessee pass, thence via Leadville, Twin Lakes, Lake George, the Divide, Crystola, and down the beautiful winding Ute pass to Manitou, Colorado Springs, and Denver, where we camped in the City Park Tuesday afternoon, August 24, 304 miles from Glenwood Springs. En route we lost nearly all of a Sunday in Leadville, undergoing repairs. Our tent made the thirty-second camp in the Denver reservation, and it was a lively canvas village, full of camping activities of every sort.

The status of the motor camper is more fully established throughout the state of Colorado than anywhere we have ever been, but nowhere are his wants and requirements better understood and cared for than in Denver.

From Denver to Chicago our route led through Greeley, Kersey, Fort Morgan and Julesburg to Big Springs, Neb., thence eastward via North Platte, Kearney, Grand Island and Fremont. This section was mostly Lincoln highway, and from Paxton to Odessa was just one detour after another around the impassable quagmires that infested that section at that period. At Omaha we paid 20 cents to cross the bridge over the Missouri river to Council Bluffs. Iowa was crossed via the river to river route into Davenport, thence a charming bit of road leads up the west bank of the Mississippi river to Clinton, where we again paid 20 cents to cross a

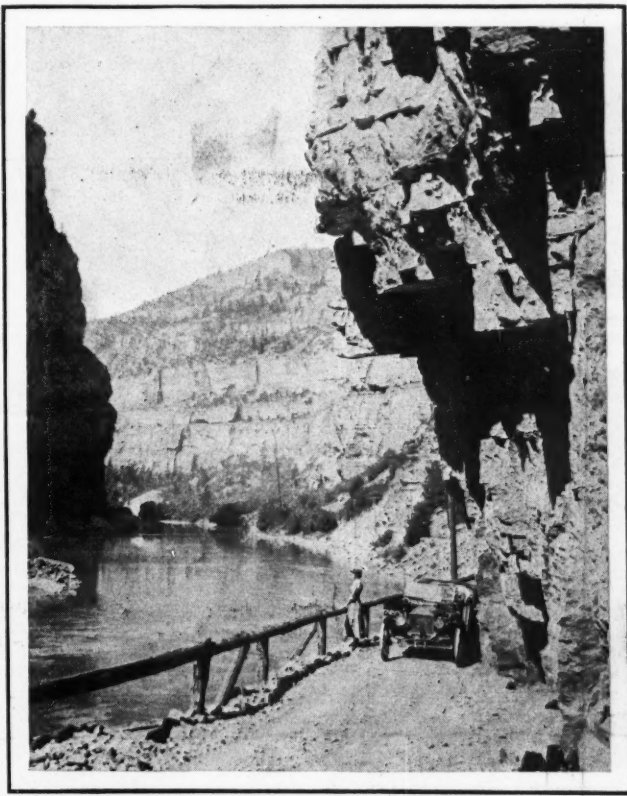
over the Mississippi river into Illinois.

All the way from the Pacific coast to this point we had been favored with good weather, excepting the daily thunderstorms in the Rockies; but crossing Illinois was a prolonged baptism of mud. Our route led through Sterling, Dixon, De Kalb and Geneva. We left our Denver camp Friday afternoon, August 27, crossed the Missouri river at Omaha Wednesday forenoon, September 1, crossed the Mississippi river at Clinton Saturday noon, September 4, and landed in Chicago Sunday evening, September 5, 1,216.4 miles from Denver. Here our resourceful and hospitable friends saw to it that we lacked for nothing, and even provided the means for drying our saturated camping paraphernalia.

Nearly Arrested in Buffalo

From Chicago to Buffalo our eastward route led through Valparaiso, South Bend, Elkhart, Goshen and Ligonier, at which point we took the Blazed Trail route to Kendallville, Bryan, Stryker and Toledo; thence Fremont, Norwalk, Oberlin, Elyria, Cleveland, Ashtabula, Erie, Fredonia, Silver Creek and Buffalo. We left Chicago the afternoon of Wednesday, September 8, were in Toledo Friday noon, September 10, Cleveland noon the following day, and Buffalo Monday forenoon, September 13, 607.4 miles from Chicago. In Buffalo a Main street crossing officer all but swept us into his net because we lacked a front number, the same having met an untimely end on a high center out in Nevada.

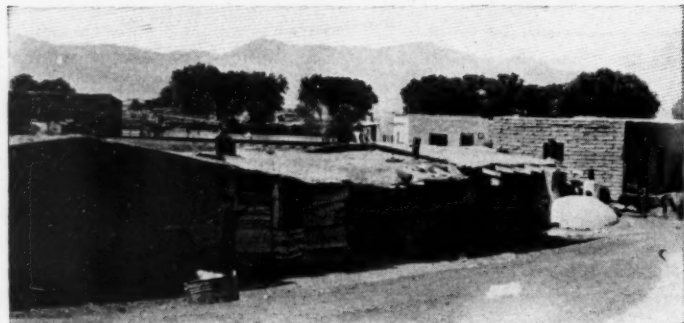
New York is our old home state and our progress across it was anything but
(Concluded on page 37)



Canyon of the Grand between Glenwood Springs and Walcott, Colo.



Senoritas pose with soldiers before Mexican oven



Typical Mexican village north of Ascension



Digging for water near a giant yucca



A noonday halt for lunch on the return trip from the U. S. base in Mexico



A Packard train halted near lake in Mexico



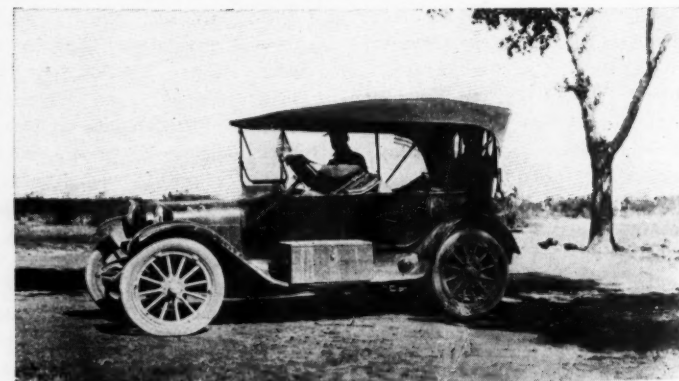
Through the cactus and sagebrush of the Mexican mesa



A Packard train halted at the border. The big van-like vehicle a Packard repair car



A stop to inquire the way near the border



The Dodge car with its offending American flag. Taken at the Mexican lake

"Those Flag, He Must Come Down," Says Sentry

Old Glory Ordered Off Radiators of Truck Train in Mexico

by Carranzista Soldiers

"A H, senior, you will please take him down."

"Take who down?" inquired our chauffeur as he brought the car to a standstill at the Carranza's sentry's signal.

"Those flag, senior, those American flag," he explained in something resembling English as he indicated the new star spangled banner that waved from our windshield.

Tom Phillips, in the front seat and just down from Detroit, bristled like an aroused terrier; I could see his lips form that urgent invitation to go to—blazes—which any red blooded American extends on such occasions, but our military chauffeur laid a restraining hand on his arm.

"Don't," he said in an undertone, "these fellows are just like tinder; they blow up in a minute and we have to humor them. Remember, we are in Mexico now, and we have to meet such insults with 'smoosh,' or there is hell to pay."

Phillips subsided, but he was still smoking around the collar as the persistent "spicks" continued:

"It is ver' bad if you carry those flag; it is ver' bad for the old people of our country; they will be ver' bad. You see, senores," he continued as rapidly as his comprehension of English would permit, "it is all the same if we carry the flag of Mexico—pronounced 'Mehico'—in your country; it is ver' bad for your old people," he concluded, with a conciliatory grin.

An Ambuscade

Just what he meant by "old people" we couldn't determine; perhaps he meant "all our people." But it was apparent that he wanted us to take down the flag, greasers regarding us from a half-ruined greasers regarding us from a half ruined adobe—an excellent ambuscade, by the way—he would have achieved a great diplomatic victory.

But we had no intention of removing the flag, and we didn't, though plainly the situation did require diplomacy. We had ready weapons, but we were only four, exposed in a light car, while the dozen or so Carrancistas had the protection of the adobe. However, by pretending not to understand his demands clearly, and Phillips admitting to him with a paternal air that he did have an "argument," our chauffeur eased in the clutch and we moved on. From the corner of my eye I could see the expression on the sentry's face, and it was anything but one of satisfaction.

All this happened at the squat, squalid little huddle of adobes graced with the name of Palomas; which means "feather." Just what the connection was we failed

By Hi Sibley

Motor Age's Special War Correspondent
in Mexico

to learn. We were riding in a Dodge scout car and were endeavoring to overtake a Packard truck train to which it was attached, and which had preceded us by an hour or so that morning.

Overhauling a truck train with a touring car would seem, ordinarily, a simple matter, but over such roads as these 10 miles an hour is a high average for one who has any regard for his springs. Presently we came upon the train, which had halted besides a pretty little lake, and it seemed like a mirage. This was a new route directly south of Columbus, and there were no lakes for some distance over the other trail, which led off southwest toward Gibson's ranch, on the border, and Espia. After weeks of arid sand dunes we had a powerful hankering to take a swim, but we concluded not to indulge in that rare luxury as there were too many Carrancistas about who might take a sudden notion to go duck hunting. The lake is fed by springs which bubble up clear as crystal from the sands along the shore. We rushed for our canteens to take a cooling draught but it was a great disappointment. The water was warm and brackish, and about as refreshing as a sip from an August rain barrel.

It was a delightful picture, the lake and big trees with the truck train drawn up along its shores. It was an intensely bright morning and the gaudy red and yellow bandanas which the chauffeurs wore around their necks blazed like flame. All around us for miles the mesquite dotted mesa, punctuated here and there with Spanish bayonet, stretched off to the distant mountains, and the cloudless sky was as blue as a new robin's egg.

Dignified by Name of "Roads"

Having had a chance to rest and stretch their limbs, the truck men returned to their mounts and proceeded on their long weary journey to the advanced front, a distance of 300 miles over the most arduous roads, and a round trip that will consume 10 days. Here Phillips, R. L. Vernon and myself gave up our places in the Dodge car to the officers of the company, and got in the Packard in which they had come out, to return with C. E. Morton. But first we had been warned not to tarry at Palomas, for there might be trouble. After that warning we lost all interest in taking any pictures at the sun-baked little village.

Even in the big car we were obliged to proceed slowly over the adobe road, which led over a succession of arroyos, and any

kind of speed was impossible. Although this route has been used only 2 weeks, the trucks had cut it up badly and the ruts in places were hub deep. Here and there was a murky puddle from a recent rain, and the nature of wet adobe is such that one negotiates it with the greatest caution. The slightest crown on the road will cause the car to slide into the bordering ditch, chains or no chains. Although this country is in all aspects a desert, there are occasional torrential rains, and at such times the heavy trucks are stalled completely. A week ago three trains were held up here for hours, as helpless as so many elephants in a swamp. Adobe, after a rain, is bottomless, and decidedly more slippery than the blue clay found around the great lakes. The road was at its best even now, but at that the trip was very trying. At 15 miles an hour, one was in constant danger of fetching up against a top bow. Here and there were great patches of white alkali, like northern snow drifts in a tardy spring.

Some Local Color

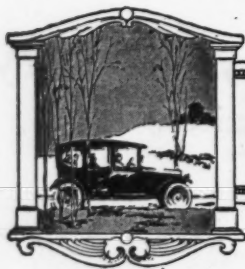
At one little town north of Ascension we stopped to rest our aching bones, and as we found no soldiers here, decided to get some snaps of typical Mexican color. A little white Spanish church attracted our attention, and as we leveled our cameras at it a comely seniorita appeared at a neighboring doorway, and we invited her to get in the picture, which she did after some display of native shyness. Presently other senioritas and a "muchacho" or two, not to be outdone, joined her.

An old "abuela" or grandmother, offered to show us the inside of the church, and insisted that we take a picture of it, but we explained as best we could that there was not enough sunlight in the windowless structure. It would have made a unique picture, however, for the shrine nestled in a perfect bower of paper flowers. There were thousands of them.

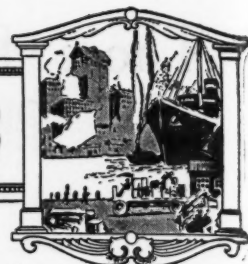
Just before we turned to leave, our seniorita ran to her garden and returned with an armful of big roses, one of which she pinned on each of us, blushing, no doubt, under her tawney complexion, and we felt very kindly disposed toward that village which had demonstrated no hostility toward us gringos. The explanation of their attitude probably is that the troops going through had been very generous with their American silver, a much needed commodity in Mexico just now, and it is true that the few dimes we distributed were received with very effusive "muchas gracias, senores!"

As we neared Palomas we arranged our artillery so that it would make the most

(Concluded on page 15)



EDITORIAL PERSPECTIVES



Pedestrians and City Traffic

IN THESE days of rapid transit, measures should be adopted by large municipalities towards a better regulation of pedestrian traffic in downtown thoroughfares. The "come" and "stop" whistles should mean the pedestrian as forcibly as they apply to vehicular traffic. And offenders should come in for the same official wrath or detention that careless drivers of conveyances provoke.

WHEN the traffic cop whistles, there is a general stampede from two directions at least, but the swarm of traffic approaching from the remaining two points of the compass comes to a halt. This is all very well and good, vitally necessary for the safety of life, limb and property. But after all, is not something lacking? Should not a further step be taken toward the safeguarding of the common weal? Let us see.

WHO is it that heeds the shrill, single blast of the traffic cop's whistle, or its double trill of warning restraint? The persons operating the vehicles bound east, west, north and south.

The 24-Hour Endurance Run

SO much history is made from sunrise to sunrise in these days of submarines, aeroplane raids, diplomatic entanglements and political maneuvering that the world scarce has time to pause and take note of the feat of one man in covering a greater distance within the limits of one day than ever has been done before. Ralph Mulford's achievement with a Hudson car in the 24-hour run against time is of more significance than the hasty observer might believe.

TO duplicate the record of 1,819 miles, if driving overland one would be obliged to travel a distance more than two-thirds of the way across the continent. Starting from New York at sunrise today, and driving southwest by west in a straight line, one would arrive in the vicinity of Santa Fe, N. M., at the same hour tomorrow. It took Edward Weston, champion pedestrian, 61 days to walk 1,546 miles in 1913. Ralph Mulford drove his car three times as far every hour of the 24 as Weston walked in a day.

ONE of the noteworthy facts of the performance was the almost constant driving speed. Taking into consideration the stops, the speed from the start to finish was practically uniform and did not vary but a fraction more than a mile during any 100-mile division along the way. In this the manufacturer shares honors with the driver. The record was made with a Hudson stock chassis and the only mechanical difficulty experienced was in the destruction of six spark plugs and two pins in the carbureter. Tire troubles, as well, were almost unknown, a fact that speaks strongly of the merits of wood surfaces on speedways. The endurance of three out of four tires for the whole distance is quite as interesting as the endurance of the car, as it shows a high degree of efficiency and goes to prove that the cord principle of construction is correct in adaptation to withstand severe usage and long travel.

They are the only ones who seem to be seriously concerned, yet they have the least at stake.

HITHER and thither the people rush, like distracted ants, finally poising before the oncoming storm of wheels. They know no signals and heed none. Pushing to the very hairline of danger, they strain and tug until the last flicker of traffic has passed. Theirs is the divine right of right of way whenever they think they can make it. In the horse and buggy days they enjoyed freedom of the crossings. They still enjoy it. The restraining arm of the law is not for them. Hour by hour they dicker with disaster by "scooting across," and hour by hour they get by.

BUT once in a great while the minions of ill luck, chance, circumstance—call it what you will—turn an ugly trick for the hospital or the morgue, one or the other. And nine times out of ten the driver of the vehicle is held to account. How some persons escape with their lives day after day is the surprising thing. As a matter of fact, time is saved and nerve strain avoided by crossing streets in the direction of traffic movement.

Great Britain's License Law

GREAT BRITAIN in imposing a new schedule of taxes on motor cars has provided a convincing, though unfortunate, example of how an unwise legal restriction may have the effect of forcing designers of motor car engines to conform to the arbitrary provisions of a law, rather than making the law conform to the scientific and mechanical principles of gas engine design. The tax levies have been revised on a horsepower basis and increased because of the urgent financial needs entailed by the war.

THE stroke or total piston displacement is disregarded, while the scale of license fees is graduated with reference to the bore. Doubtless the law will accomplish its immediate purpose of affording additional revenue for a war-burdened government. It also places the designer in the peculiar position of having to reconcile the structural necessities of engine design and arbitrary legal requirements. The injustice is not merely possible; it exists in reality for the owners of Fords. The Ford is rated in the class between 80 millimeters, or 3 1/8 inches, and 102 millimeters, or 4 inches.

OWING to this the license fee for Ford cars will be three times the present sum, or, namely, \$90.72 per year. Considerable indignation is felt among Ford owners. Another result is the proposal to form a company which will supply cylinder liners and reduced pistons to fit any Ford motor, the object being to reduce the bore until it comes within the next lower group, on which the tax is only \$30.24. Obviously it is the law which needs changing, not the motors. It has been pointed out that the same total amount could be raised more fairly by charging so much per 100 cubic centimeters, about 6 cubic inches, as this volume normally produces about 1 horsepower. Even this falls harshly upon owners of old cars.

WARNING

MOTOR AGE desires to warn its readers against a solicitor signing himself "C. A. McNally," "Frank Knight" and "C. E. Sparks," who has solicited subscriptions to MOTOR AGE in the states of Oklahoma, Kansas, and who, at last reports, fraudulently obtained a number in the state of Missouri. MOTOR AGE employs no such solicitor and should you be approached by this party, promptly notify your chief of police and wire MOTOR AGE, Mallery Building, Chicago.

Junk Man Rides in Hash-Mobile

Motor at Rear and Body Rests on Buggy Springs

STERLING, Ill., May 6—Joseph Rubin, a junk dealer and resident of Sterling, has constructed a motor car out of parts of used cars sold to him as junk and he now makes his rounds in the contrivance. The length is but 6 feet and the width 3 feet. The engine is at the rear, being bolted to the axletree.

Buggy springs support the body. The gasoline tank is attached to the back of the seat. Fully fifty cars contributed to the makeup. As a little of everything was required to assemble the outfit, he has christened it "Hash."

DISPUTES A'PLENTY ON CURB LAW

Mobile, Ala., May 6—When Bill Driver drives up to the curb in a Mobile street, stops and leaves his machine hurriedly to keep a date for which he is already 15 minutes late, and a big traffic dragon comes up and stops him, Bill becomes somewhat peeved. When the officer inquires in no gentle tone why he has left his car in the middle of the street and Bill replies that the machine is as close to the curb as it can be without being up on the sidewalk, an argument is the inevitable result.

And the reason for this is all because the Mobile traffic ordinance has a provision that cars shall stand "as close to the curb as practicable." There is frequently a wide difference of opinion as to how big a distance "practicable" means. It should be stated that the ordinance had that provision, because it has been amended to read that vehicles shall be parked so that the wheels shall not be at a greater distance than 12 inches. Thus is eliminated what the crossing officer calls a lot of bum arguments. Hereafter owners of all cars in Mobile found beyond the 1-foot line are in danger of arrest, for the folding rule which, presumably will be part of the equipment of the traffic men, like figures, is noted for telling the truth.

THE WAIL OF A LOST CAR

Cincinnati, O., May 6—Robert C. Harris, a newspaperman of Cincinnati, who had his car stolen recently while attending the theater, was inspired to indite the following prose poem expressive of the deprivation:

By a Victim

"From the depths of my carbureter I send forth an appeal for help. The hand which was wont to take an affectionate grasp of my steering wheel is no longer

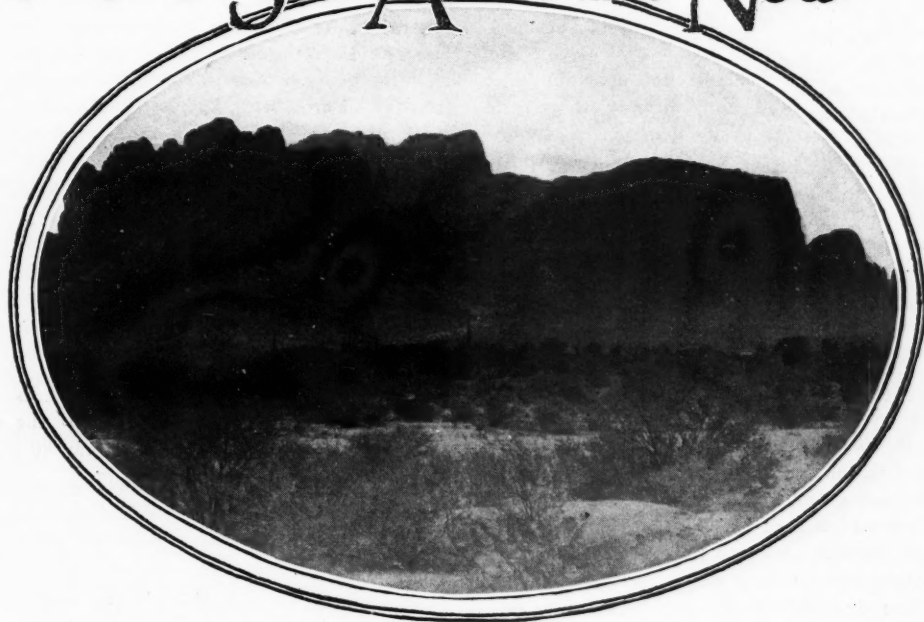
near me. I am no longer throttled with loving care. My paths have strayed from the smooth macadam amid green fields into the rocky ways of uncouth men. I hunger and thirst for fresh gas and oil but the hand which now guides me is empty. Surely has great misfortune come upon me in the days of my youth. My cup of sorrow is full while my tank is empty. What tortures have I endured in strange hands which knew me not nor respected my sensitive nature! The pulsing of my engine is no longer music to the ears of my new master. Neither does he strain his every nerve to discover some new squeak in my being. What matters it if my brakes grind or my clutch shrieks. I am far from friends and my rescue can not come too soon. Kidnapped and hidden away, I am thoroughly miserable. The sound of my horn grows weaker. Unless I am rescued soon, it will be too late. My whole being yearns for the sight of a familiar face. My number is 50610-Ohio license. My body is blue and my wheels are red. I am a roadster of pretty design. I belong to Robert C. Harris, of the Times-Star. I want to go home.—The Missing One.

Loses Converts by Fuel Thefts

Motorists Forsake Revival When Vandals Drain Gasoline Tanks

TAMPA, Fla., May 6—What shall it profit a man if he goes to hear a celebrated revivalist, gets religion and comes out to find that thieves have stolen 5 gallons of 23-cent gasoline from his motor-car? Motor car thieves in Tampa are not satisfied with removing such comparatively inexpensive things as spark plugs and other detachable articles, but have begun to remove fuel from tanks. They use a hose and syphon, it is believed, to empty the liquid from the motor car tanks into cans. To accomplish this they have found the tabernacle where a big revival has been held a favorable place for their operations, as there are not many people outside and a large number of machines are parked in the vicinity.

See America First
• • • See America Now



EDITOR'S NOTE—This is the seventy-eighth of a series of illustrations and thumb nail sketches of the scenic and historic wonders of America to be published in *Motor Age* for the purpose of calling the attention of motorists to the points of interest in their own country.

NO. 78—SUPERSTITION MOUNTAIN SCENE OF THE ROOSEVELT DAM

WHILE the Roosevelt Dam in itself holds special interests for the tourist, legendary history concerning the territory in which the dam lies lends an air of enchantment to the surroundings. According to the legend, the mountain range now known as Superstition Mountains formerly was called the Mountains of Foam, because at the end, which is cut off steep like the corner of a bastion, there is seen high up near the top a white brow of rock which continues along the range for a considerable distance, and the Indians say that this is the mark of the foam on the water which rose to that height at the time of the great flood brought on by a man who had grown angry with the people of the valley and in revenge caused the deluge.

Playing Fair with the Motorcyclist—a Code of the Road

One of Their Number Recommends the Golden Rule for Motorists Who Crowd the Smaller Machine into the Ditch



Finally he managed to slip ahead of the car, whereupon he proceeded to drag both feet in the road, stirring up a tremendous cloud of dust. When the chauffeur tried to run him down, he merely accelerated, easily keeping ahead; when the car slackened speed to avoid the dust, he did likewise. For a number of miles he gave the motoring party a generous dose of their own medicine

By George M. Johnson

AS a motorist, you doubtless appreciate the undercurrent of dislike—perhaps of open hostility—that prevails between drivers of motor cars and motorcycles. Possibly you may yourself be one who regards the humbler vehicle with no friendly gaze, as it zips past you on the road like a projectile from some huge cannon. Fortunately, this feeling seems confined to the road, for elsewhere the driver of a car and the motorcycle rider are often on the best of terms.

The cause of the ill feeling is not hard to locate, nor is the blame entirely on one side. It really should not continue and let us hope will not; already there are signs that point to its demise. As a motorcycle rider of 7 years' constant experience in a section of the country where motor traffic is enormous, the writer feels confident of his ability to state the viewpoint of the motorcyclist; his automobile experience is less extensive, but more or less frequent association with car owners has given him some insight into their side of the question.

Equality Not Recognized

It seems rather strange, but both motorcycle rider and driver of a car feel superior to each other. The motorcyclist is proud of the high speed at his command, which enables him easily to pass the heavier motor vehicle, whether on the level or up hill, while the driver of the passenger car usually regards his speedy rival as a rank interloper—a common sort of person, without money enough to travel in the motor car class, who therefore goes snorting around the country on a vicious devil-bicycle, scaring decent people half to death.

Quite likely the rift began along this line, while acts of discourtesy and road-hoggishness on both sides have aggravated the feeling to a considerable extent. It is my firm opinion—of course, I'm prejudiced; I admit it freely—that the motorcyclist has far more to complain of than

has the car owner. It is beyond his power to do a motor car any serious damage in a collision, for a mix-up that might wreck his machine and cost him his life could do little more than bend the mudguards and smash the headlights of the larger vehicle. Motorists as a class certainly are not to be ranked with that worst type of all hogs, the road hog, but the acts of a few individuals have given motorcycle riders the general impression that they should be so considered. It is only another case of the majority being held to account for the acts of a small number. Let me cite a few illustrations of this, taken from my own experience.

One black mark which I have long held against motor car drivers dates back to the spring of 1912, when a machine coming in my direction, on the wrong side of the road, forced me into the ditch to avoid being run down. The driver had the whole road to turn into, while I had nothing but a ditch, but he chose to stay where he was because the highway was in poor condition over where he belonged. He did not twist his steering wheel by a hair's breadth, and his mudguard actually grazed my coat as I dumped self and machine into the ditch to avoid what might have been a fatal accident.

I met one motorcycle rider in the west—a chap who had a sidecar attached to his machine—who had been crowded into the ditch so often by passing motor cars that he always kept a six-shooter in a holster attached to the sidecar within easy reach of his hand. His idea was that a gun might compel a few feet of road space when a driver was too lacking in decency to give it otherwise.

There is a class of drivers who apparently think that others, especially smaller vehicles, have no right on the highway at all. Such individuals usually appear in

high power cars and often give no warning of their approach, it being their habit to shave other vehicles as closely as they dare, snarling out a curse as they rush past, because the other occupant of the road hasn't given them the whole highway.

There is another type of driver who takes delight in holding a motorcyclist behind him on a narrow road where there is no room for the smaller vehicle to get by unless permitted to do so. That is a splendid way to engender the hardest of hard feelings, for no motorcycle rider likes a steady diet of dust for half an hour at a stretch.

I learned of one chap who was treated in this way on a very dry and dusty road. Finally he managed to slip ahead of the car, whereupon he proceeded to drag both feet in the road, stirring up a tremendous cloud of dust. When the chauffeur tried to run him down, he merely accelerated, easily keeping ahead; when the car slackened speed to avoid the dust, he did likewise. For a number of miles he gave the motoring party a generous dose of their own medicine.

Gloat Over Other's Difficulties

It is unnecessary to continue with further illustrations, but such occurrences as the above cause the average motorcycle rider to snort with glee whenever he sees a motor car in distress along the road. And can you blame the rider? There is doubtless not a single motorcyclist who could not relate numerous tales of high-handed treatment on the part of car owners.

So much for the motorcyclist's viewpoint. Now I have not been able to discover that the motor car driver has any very serious charges to make in his turn. He complains that the motorcycle goes too fast; very likely that is true, in many cases, but the reckless rider usually risks nobody's life but his own. If he bumps into a wagon from behind, he himself must

pay the penalty, whereas a motor car run amuck is another matter entirely.

Chauffeurs and car owners have said that they are in constant fear of killing some fool motorcycle rider, because so many of the latter take desperate chances in passing their machines. It is unfortunately true that in our ranks are some individuals who delight to show what regular devils they are. These are the chaps who make the hair of respectable motorists turn grey, but they are not any more representative of motorcycle riders as a class than the road hog in the motor car is typical of his fellows.

Really the car owner cannot afford to arouse the resentment of the motorcycle riders, for the latter can make themselves extremely useful on occasion. They are decent fellows, gentlemen, most of them, ready to do a good turn to anybody in trouble. I have known them to carry distress messages from stalled passenger machines to the nearest repair shop, and often to assist in making the repairs. I have stopped to replace a blown out tire for a motoring party consisting entirely of women, and, once, when I was in a particular hurry, removed a tire that was rusted to the rim for two men whose lack of knowledge about tires was nothing short of extraordinary. Then I had the pleasure of disdaining a twenty-five cent tip for my services.

The season of 1916 will show a vast increase in the number of motorcycles on the road, and they haven't been especially scarce in the past. That means a greater opportunity than ever to bring about a more pronounced feeling of dislike between drivers of cars and motorcycle riders—or an equal opportunity to end it. Will you not, as a chauffeur or owner of the car you drive, do your own share?

Remember that the motorcycle chap honestly feels that he has a grievance against you, but remember also that he is a fair-minded sort of person, quick to appreciate right treatment and equally quick

to show resentment at anything unfair. Above all he is willing to meet the motorist half way, which attitude seems as fair as anyone can ask.

Those Flag, He Must Come Down," Says Carranza Sentry

(Concluded from page 11)

formidable display, lowered our voices and stole upon the village as quietly as possible. There were no soldiers in sight, but the same dejected looking mule with Mexican saddle with its enormous saddle horn, still stood in front of the principal abode. We sped past without being discovered, but beyond the place Morton could not resist giving a taunting blast with the Klaxon. Looking back I saw one "spick" pop from the doorway and then three others, but they did not make any move to fire on us.

At the international boundary line we stopped to chat with the U. S. sentry and he gave us much interesting gossip. Twelve men are stationed here, one on duty for 3 hours at a time. They have the names of some thirty or so Mexicans living in the vicinity who go into Columbus occasionally, and the soldiers know all of them by sight as well. When a spick is permitted to pass over the line, first having been searched for arms, a check is placed after his name, and if he doesn't return after a reasonable time an investigation is made.

This day, May 5, happened to be the Mexican Fourth of July, and there had been a wild celebration that morning with both liquid and salt-peter ammunition. There had been considerable firing of guns and shooting off of mouths according to the sentry, but he seemed to regard the Mexicans as a lot of obstreperous youngsters, and said that they were very careful to keep on their own side of the international fence and not clash with the

sentries, for whom they had a devout respect.

From the Mexican custom house here, a ramshackle tin and wood affair, a Carrancista patrol starts out every morning with 150 rounds of ammunition, that is, as the sentry stated, when they are sober enough. About 18 miles southeast of this post were garrisoned about 3,000 armed Carrancistas, we were informed. We facetiously remarked to the sentry that he would not have far to run to Columbus—3 miles—if the Carrancistas came.

"I don't intend to run," he retorted, setting his jaw grimly, "and I know mighty well the other boys won't run. I only wish they'd let us go in and get after some of those chaps."

9,000 TRUCKS MONTHLY FOR ARMY

Washington, D. C., May 6—The war department has made some inquiry as to the number of motor trucks of suitable characteristics available in this country on short notice for use by the army. All the manufacturers in the country, about 200 in number, were approached and 113 responded.

It was found that by throwing out motor trucks that are too light or too weak and those that are too heavy or cumbersome, it would be possible to obtain, according to representatives of the manufacturers, something more than 3,000 trucks a month of a type that will conform in all main essentials to army needs. It also will be possible to obtain 6,000 additional trucks a month of a type that nearly conforms to departmental specifications and that could be used in an emergency. In other words, if the situation were pressing, there would be available an output of 9,000 trucks a month.

The specifications, among other things, limit the weight to 5,000 pounds, for the reason that heavier trucks are apt to cut through the crust of roads or break through country bridges and give much trouble generally over roads likely to be used.

DIXIE HIGHWAY FOUNDER DIES

Chattanooga, Tenn., May 6—Business was suspended throughout the city when the funeral of the late John A. Patten, one of the founders of the Dixie Highway Association, took place last week. Mr. Patten died in Chicago, following an operation. He was the son of the late Major George W. Patten, a former resident of Chattanooga. The son was born September 27, 1867, while the family were living at Delavan, Ill. They had lived in Chattanooga since 1883. The younger Mr. Patten was formerly president of the Chattanooga Chamber of Commerce. He was engaged in the manufacture of medicines for many years and was actively interested in several financial and development enterprises. He became well known through his efforts toward the building of the Dixie highway.



I have known them to carry distress messages from stalled passenger machines to the nearest repair shop, and often to assist in making the repairs

Hughes Wins 100-Mile Coast Race

Drives Mercer 61.6 M. P. H.—Good Second,
Rhodes Third

BAKERSFIELD, Cal., May 7—Special telegram—Hughie Hughes, in the Omar, won the 100-mile track race staged by the Kern County Fair Association here today, taking the event at 61.6 miles per hour. The English speed merchant jumped into the lead on the first lap and held front position to the finish with but one stop at the pit. The 100-mile ramble was made in 1 hour 36 minutes 8.4 seconds. Frank Good, in a Stutz, won second money, at 61.18 miles per hour, covering the 100 miles in 1 hour 38 minutes 4.8 seconds. Third money went to Clyde Rhodes, a local speed king, who drove his Studebaker special to the tune of 60.9 miles per hour. The Studebaker made the course in 1 hour 38 minutes 30.6 seconds. Frank Elliott, in the old Mercer Monk, which now is known as the Gordon Special, won fourth place at 60.4 miles per hour, with 1 hour 39 minutes 20.6 seconds charged up to him on the timer's sheet. Lou Gandy, in a Gandy Special, was running fifth and was flagged in the ninety-seventh lap.

Debolt, in the McKees Special, went out in the thirty-third lap with a broken oil line and Ed Waterman, in a Gandy Special, went out with a burned bearing in the sixty-sixth lap, after driving a wonderful race. For the first 10 miles the track was in excellent condition, but the speed of the cars worked through the hard surface and soon the course was enveloped by a cloud of dust. The drivers and cars soon looked like dust-gray night riders and on every turn the spectators looked to see two or more of the bunched speeders come together.

Twice the officials were on the verge of calling the race off but the wind came up and blew the dust off the track and back into the grandstand where the spec-

tators were colored up to match the drivers. It was a wonderful race to watch. The spectators were on their feet throughout the 100 laps, cheering their favorites as they passed and repassed on the dangerous turns and fast stretches.

Frank Good had a narrow escape when he blew a tire on the backstretch just after coming out of the turn. Only the clever driving of the pilot saved the crew and car. As the tire blew, the car leaped into the air in a cloud of smoke and the ambulance started across the field, but a second later the Stutz was seen flopping across the course like a wounded animal. Good mastered the machine and rolled into his pit for a tire change, as calm as if he had just ordered a glass of beer instead of cheating undertakers.

Hughes had a narrow escape also in the eighty-first lap when Rhodes crowded him on the turn and he fought for his life in the dust. Hughes was called into the pit by Fred Aubert, chairman of the technical committee in eighty-sixth lap to wire up a loose tie rod which had jarred loose. At this time Hughes filled up with gas and went on through the race with a leak in the gas tank which was expected to put him out before the finish.

The course was well policed and it was the best managed race staged in southern California this season, although there were only 3,000 spectators.

ROUTE YELLOWSTONE SOCIABILITY

St. Paul, Minn., May 8—With details settled for the Yellowstone park sociability tour to start from the Twin Cities, July 20, road improvement work along the national parks highway route has already been inaugurated. Every county through which the tour will pass in North Dakota

is preparing to compete for the honor of providing the most highly cultured right-of-way for the motorists.

The pathfinder car has been furnished by the Chalmers Motor Co. It arrived here from the factory this week. The pathfinder will be finished in battleship gray and bear an inscription relating to dates the tour will start, and calling attention to the bridge dedication ceremonies at Medora, N. D. Telegraph equipment will be carried and a coterie of machinists will accompany Pathfinder C. S. Harrington.

AMATEURS IN SPEEDY PRACTICE

Chicago, May 8—Entrants in the non-professional drivers' invitation race May 20 showed some very fast time in practice yesterday on the Chicago speedway. F. C. Sawyer made the fastest lap in practice so far, when he drove his Mercer roadster one lap of the 2-mile course in 1 minute 30.4 seconds. This is close to 80 miles an hour. There were twelve owner drivers in yesterday's practice and, in addition, a number of tradesmen in preliminary workouts for the proposed trade race which may be staged on the day of the owner-drivers' event.

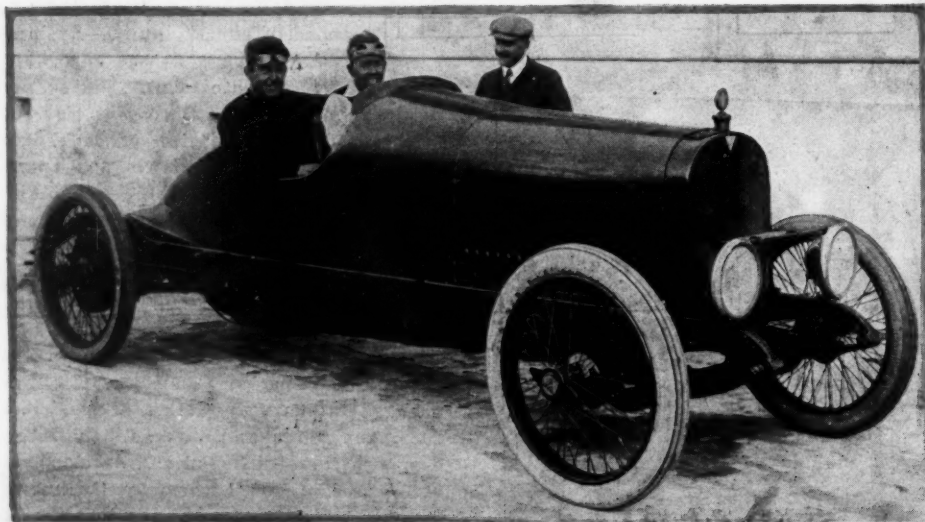
27 ENTRIES FOR INDIANAPOLIS

Indianapolis, Ind., May 5—The entry list for the Indianapolis 300-mile race May 30 closed May 1 but the records were held open until all entries which were mailed on the last day were received. The final list shows 27 entries for the International sweepstakes. The late comers included the

Racing Events

- * May 13—New York, Sheepshead Bay speedway race.
- * May 20—Chicago speedway amateur's race.
- * May 30—Indianapolis speedway race.
- * May 30—Tacoma, Wash., speedway race.
- * May 30—Minneapolis, Minn., speedway race.
- * May 30—Track meet, Elmira, N. Y.
- * June 4—30-mile race, Sheepshead Bay speedway.
- * June 10—Chicago speedway race.
- * June 20—100-mile race, Galesburg, Ill.
- * June 23-24—Interclub reliability run, Chicago.
- * June 26—Des Moines, Ia., speedway race.
- * July 4—Minneapolis speedway race.
- * July 4—Sioux City speedway race.
- * July 4—Track meet, Coeur d'Alene, Ida.
- * July 4—Road race, Visalia, Cal.
- * July 4—Track meet, Elmira, N. Y.
- * July 15—Omaha, Neb., speedway race.
- * July 15—Track meet, North Yakima, Wash.
- * July—100-mile track meet, Burlington, Ia.
- * August 5—Tacoma, Wash., speedway race.
- * August 11-12—Hillclimb, Pike's Peak, Colo.
- * August 12—Track meet, Portland, Ore.
- * August 18-19—Elgin road race.
- * August 26—100-mile track meet, Kalamazoo, Mich.
- * September 4—Track meet, Elmira, N. Y.
- * September 4—Indianapolis speedway race.
- * September 4—Des Moines, Ia., speedway race.
- * September 4-5—Track meet, Spokane, Wash.
- * September 16—Speedway race, Providence, R. I.
- * September 29—Track meet, Trenton, N. J.
- * September 30—New York, Sheepshead Bay speedway race.
- * October 7—Philadelphia speedway race.
- * October 7—Omaha speedway race.
- * October 14—Chicago speedway race.
- * October 19—Indianapolis speedway race.
- * October 21—Track meet, Kalamazoo, Mich.

* Sanctioned by A. A. A.



Ralph Mulford in the Hudson Super-Six, with which he broke the world's 24-hour record

three Crawfords which Billy Chandler is building at Hagerstown, Md., and two entries to be known as the Erwin Specials. These are entered by Grover Burgdoll, the Philadelphia millionaire.

T. E. Myers, general manager, announces that the elimination trials will be held May 26 and 27.

Race Entries to Date

SHEEPSHEAD BAY, MAY 13

Driver	Car
Christiaens	Sunbeam
Limberg	Delage
LeCain	Delage
Mulford	Peugeot
G. Bergdoll	Erwin
Stecher	Erwin
Chandler	Crawford
Davis	Crawford
Aitken	Peugeot
Rickenbacher	Maxwell
Henderson	Maxwell
O'Donnell	Deussenberg
D'Alene	Deussenberg
Resta	Peugeot
Franchi	Sunbeam
Miller	Mulford Special
Thompson	Olsen
Watson	J. J. Special
Adams	Adams Special

INDIANAPOLIS, MAY 30

Driver	Car
Christiaens	Sunbeam
Rickenbacher	Maxwell
Henderson	Maxwell
Louis Chevrolet	Frontenac
Arthur Chevrolet	Frontenac
Gaston Chevrolet	Frontenac
O'Donnell	Deussenberg
D'Alene	Deussenberg
Ostweg	Ostweg Special
Mulford	Peugeot
Oldfield	Delage
DuChesneau	DuChesneau
Rooney	Premier
Stillman	Premier
Gil Anderson	Premier
Merz	Peugeot
Alken	Peugeot
Resta	Peugeot

CHICAGO, JUNE 10

Driver	Car
Christiaens	Sunbeam
O'Donnell	Duesenberg
D'Alene	Duesenberg
Limberg	Delage
LeCain	Delage
Lewis	Crawford
Johnson	Crawford
Bergdoll	Erwin Special
Myster car from Cleveland	
Alley	Ogren Special
Chandler	Crawford
Stecher	Erwin Special

NON-PROFESSIONAL RACE, CHICAGO, MAY 20

Driver	Car
Frank Book, Detroit, Mich.	Cadillac
Dr. Robinson Duff	Mercer
Harold Scott	Locomobile
J. B. Neilegar	National
S. H. Robbins	Mercer
A. A. Clemens	Stutz
E. C. Patterson	Cadillac
William Thompson, Battle Creek, Mich.	Kasidah
William Robbins	Mercer
J. S. Thompson, Lacon, Ill.	Stutz
Frank L. Warren	Cadillac
W. A. Leet, Omaha, Neb.	Mercer
A. W. Bromsted	Mercer
J. W. West	National
E. S. Church	Cadillac
F. C. Sawyer	Mercer
Andrew Ortemeyer	Mercer

The other possible entries are Gordon Thorne, Ray Thorne, William Connery, Frank Loeffler, Stanley Eaton, L. F. Muter, P. C. Beh, Norman Herlihy and E. F. Swift, Jr.

Three other drivers are looking for cars. E. H. Young has a Mercer ordered, while Frank Book, of Detroit, has written that he will have either a Cadillac or a Hudson.

Hill Captures Gardena Road Race

Drives a Chevrolet to Victory in First Event—Connor's Ford Second

GARDENA, Cal., May 6—Special telegram—George Hill, formerly Barney Oldfield's mechanic, won the Gardena road race for cars of 231 cubic inch piston displacement and under, in a Chevrolet here today. Hill covered the 75-mile drive over the 2.2-mile course in 1 hour, 47 minutes, 13 seconds. Riding with Hill was Shorty Schryver, who rode as mechanic with Eddie Pullen during his campaign in southern California this spring.

Robert Conner, in a Ford Special, won second money, covering the 34 laps in 1 hour, 49 minutes, 2 seconds. Ed Dochtermann, in a Chevrolet, won third and Leigh Bacon, in a Little iFat 20, won fourth place, the latter two being flagged after Conner crossed the tape, as the spectators were crowding out on the course to congratulate the winners and it was believed to be dangerous to allow the race to continue.

N. D. Stutzman, in a Grant six, went into the lead on the first lap and for eight laps he had things all his own way. He came into the pits for a tire and as he was using wood wheels he lost almost a lap making the change, Hill going into first place which he held to the finish. Dochtermann ran second for six laps when he was passed by Hill. Once Dochtermann fell back to fifth place but he climbed back into third money.

The Grant never got up in the money again, going into the ditch in the eighteenth lap after losing time and making up almost half the distance. Charles Heacox, in a little Cadillac, also went in the ditch. Heacox broke a steering knuckle

and went out in the twenty-ninth lap when a few yards behind Dochtermann.

The Gardena race is to be an annual affair. It is to become the 231-inch classic of the racing game and undoubtedly will prove a great school for the young drivers who aspire to speed careers. The race was held as the main feature of the annual Gardena Valley Strawberry Day celebration and there were between 30,000 and 40,000 spectators.

MINNEAPOLIS SPEEDWAY RACE

Minneapolis, Minn., May 8—Orin Kellogg, land dealer in Minneapolis, has been appointed secretary of the Twin City Speedway Association. He succeeds E. E. Gates of Indianapolis. Inmates of the Soldiers' Home at Minnehaha Falls have been invited to attend the races on Memorial Day, though some veterans had expressed objections to opening the course on that day.

LABEL SUIT AGAINST FORD

Washington, D. C., May 6—The Navy League of the United States today filed suit in the district supreme court against Henry Ford for \$100,000 damages. The league charges Ford with having published in advertisements in a local newspaper statements of a libelous and defamatory character. The advertisement expressed the belief of Ford that the preparedness propaganda is spread by individuals and organizations having a selfish interest in the production of armament and munitions for the government.



During the night the electric timing device was watched by many as it ticked off Mulford's race against time

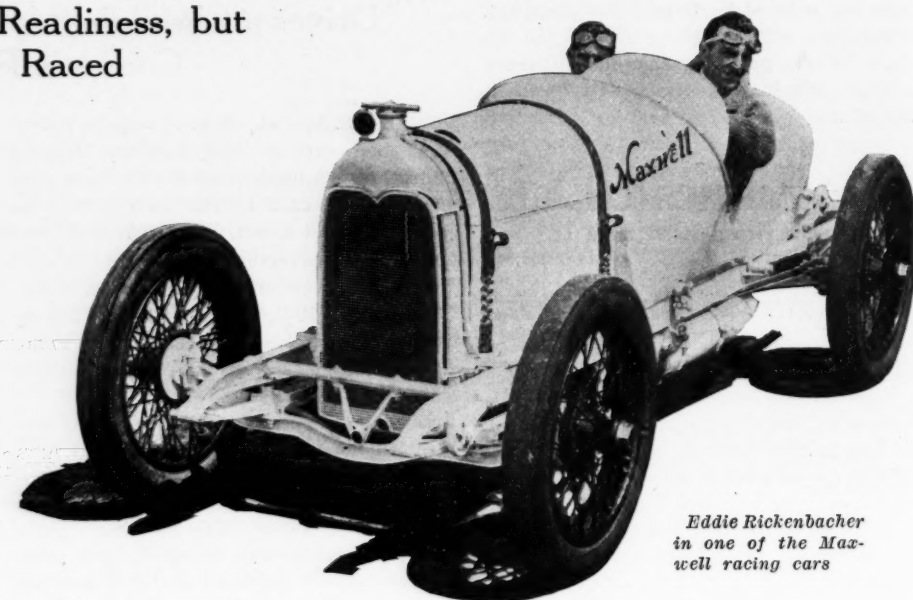
Changes Made in Maxwell Racing Car Design

Four Machines Will Be in Readiness, but
Only Two Will Be Raced
at a Time

THE four new Maxwell racing cars which comprise the Prest-O-Lite stable, under the management of Eddie Rickenbacher in direct charge, with Pete Henderson as a team mate, will make their first appearance at Sheepshead Bay next Saturday. These cars follow in most respects the design developed by Ray Harroun for the Maxwell racers of 1914 and 1915, but have a number of minor changes incorporated intended to increase their stamina and speed.

"You First, My Dear Gaston"

Rickenbacher insists that these alterations must be credited to Harroun, but Rickenbacher himself must receive considerable praise for the workmanlike way in which they have been incorporated in the design. Rickenbacher evidently believes in preparedness for, although he has four complete cars, all of which are in shape to make fast time, it is the intention to use only two of them in any race, holding the other two back for emergencies. In addition to the two completed cars held in reserve, there is a very complete supply of spare parts and a thorough system of shipping and storing of parts so that they will be on hand when needed. One of the features of his preparedness program includes a combination motor stand and shipping crate; another a parts bench



Eddie Rickenbacher
in one of the Maxwell racing cars

which also becomes the parts locker for transportation. Altogether, Rickenbacher has made very thorough plans for a successful campaign.

Exterior Appearance Changed

So far as the cars themselves are concerned, there has been a striking change exteriorly in the appearance of the Maxwells. Instead of the stub-ended rear portion of the earlier cars, a long tail has been fitted, designed to a true streamline form and thus cut wind resistance to the minimum. The shape of this tail is shown in two of the illustrations. Within it is carried the fuel tank of very large capacity, and with an exceptionally large opening, by which a can of gasoline can be dumped into it in record time. This is the main fuel supply, and is by pressure. In addition there is an auxiliary fuel supply of less capacity, carried in the cowl,

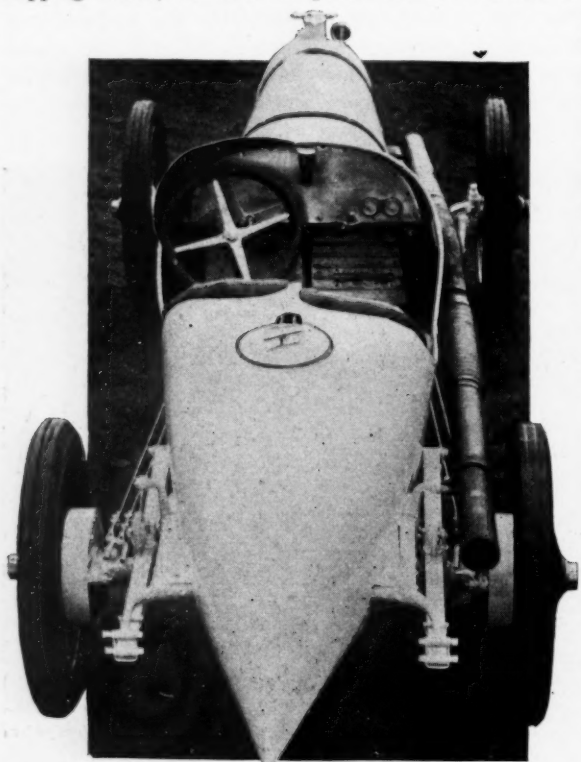
and which feeds by gravity, so that if the main supply becomes exhausted, the driver can run in on the auxiliary by throwing a valve underneath the steering wheel.

The oil supply is carried in the torpedo-shaped tank underneath the middle of the left frame member with quite short connections to the triple oil pump, a feature which will be explained later.

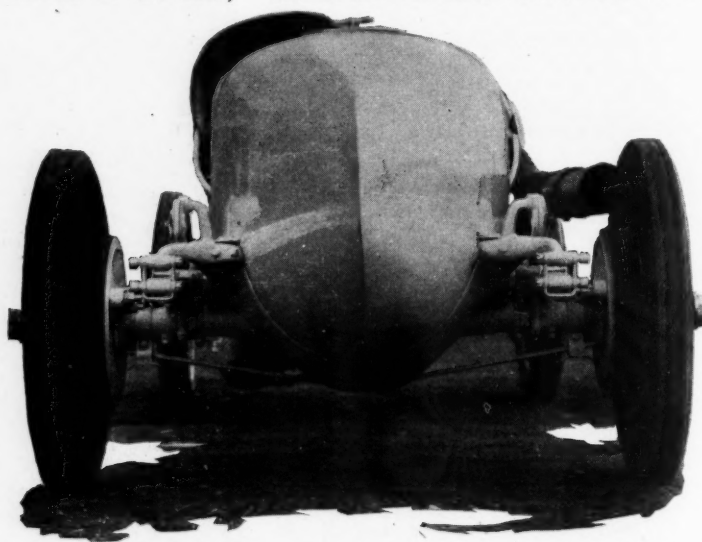
Bore $3\frac{3}{4}$; Stroke $6\frac{3}{4}$

The motors incorporate the only other changes from last year's practice. In most respects they are identical with the 300-inch sixteen-valve motors of the Maxwell team of 1915. Like those motors they have a bore of $3\frac{3}{4}$ and a stroke of $6\frac{3}{4}$. These dimensions bring the displacement to just within the limit. To be exact, it is 200.98 cubic inches.

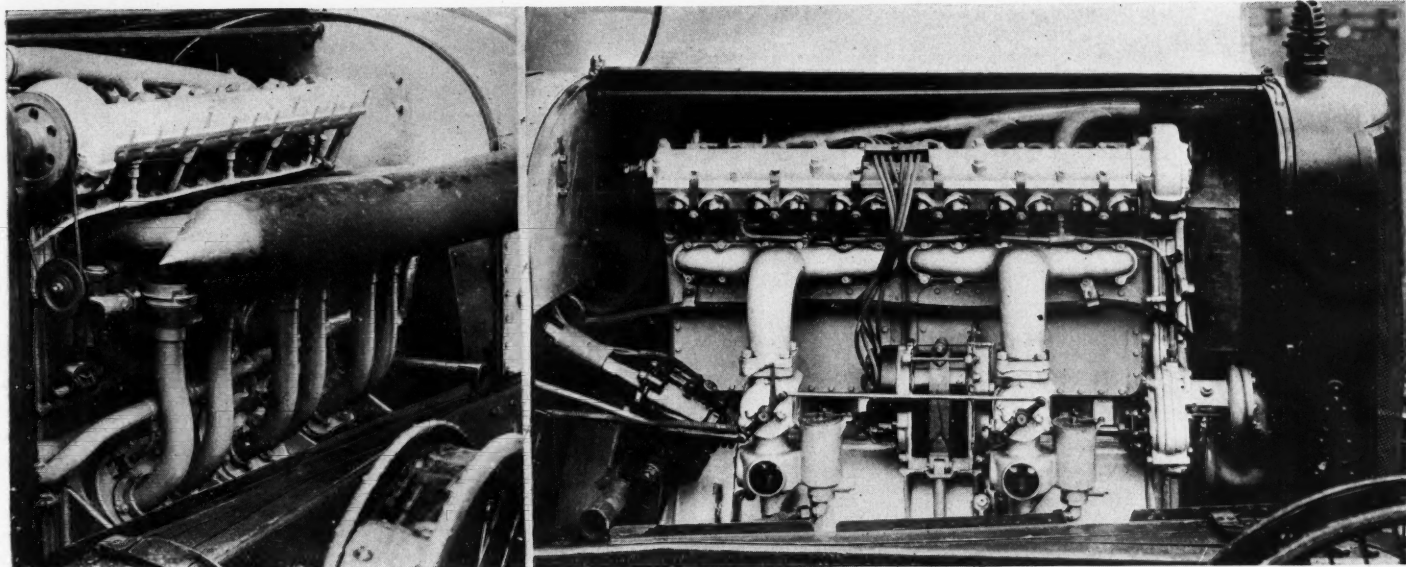
The valve sizes have been changed slightly, the intakes being increased to 2 inches; this is $\frac{1}{4}$ inch greater diameter than in the 1915 races. The exhaust valves



Bird's-eye view of the Maxwell, showing narrow front end and pointed tail



Another view of the Maxwell. This gives a good idea of how rear end has been changed



Two views of the new Sunbeam six motor to be driven by Joseph Christiaens

have not been changed, but the lift of all valves has been increased to $\frac{1}{8}$ inch, the cams opening now $\frac{7}{16}$ of an inch.

The divided intake manifold of the 1915 cars has given way to a more direct and probably more efficient intake in which the whole side of the cylinder head casting above the intake valves is opened up to the gas, thus giving a blanket of fresh gas over the entire intake valve area.

The oiling system has been changed somewhat, chiefly through the use of a triple gear pump instead of a double one employed earlier. The system is a force-feed circulating one in which fresh oil is drawn continually from the oil tank under the frame, and returned to the latter after use. This keeps the oil cooler than would be possible otherwise.

The real feature of the Harroun motor as exemplified in these Maxwells of the Prest-O-Lite team is the unique crankshaft construction. This has not undergone any change for the past season.

Connecting rods still are made of chrome-vanadium steel and have been subjected to accurate machining over all. The I-beam section is further strengthened by forging webs on either end of the section, making a very sturdy rod.

The use of magnalium pistons is continued, magnalium being an exceedingly light and strong alloy. The piston heads are domed to give them strength, and each has five rings. There are two diagonally split rings in each of the upper grooves and one wider ring below which is used for a retainer for the wrist pin. The use of magnalium reduces the piston weight from over 2 pounds, the weight of a similar cast-iron piston, to about 15 ounces.

In explanation of the counterbalanced crankshaft, it might be explained that the flywheel function is distributed along the entire length of the crankshaft and is conducive of fine engine balance. The counterbalance weight opposite each rod bearing is equal to the weight of the lower

part of the rod and its bearing, thus the active forces are balanced with respect to the center of gravity and the centers of masses revolve in the same or parallel planes. Vibration is materially reduced thereby.

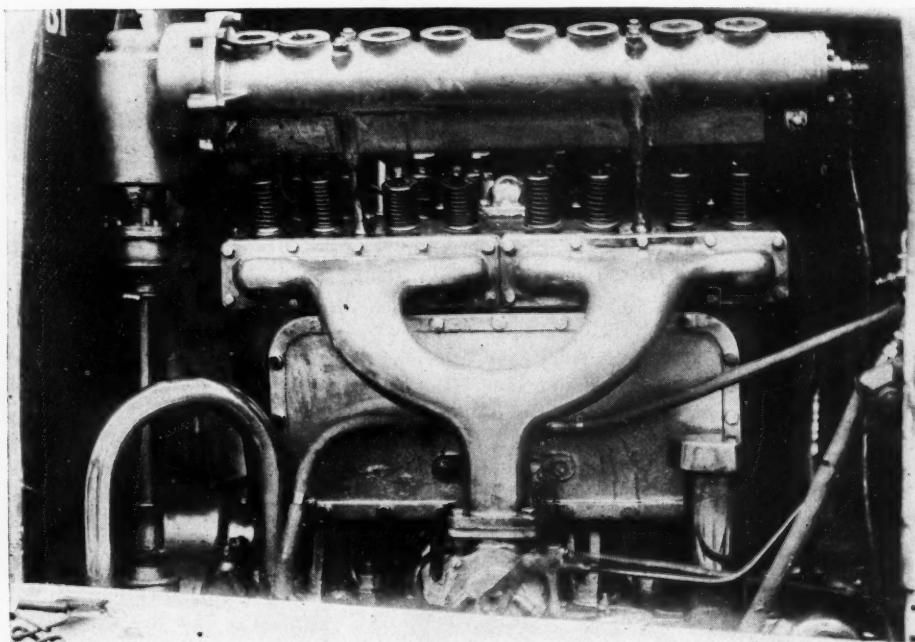
That the cars are fast Rickenbacher has proven already, as he turned one lap of the Indianapolis speedway at the rate of 98 miles an hour, he says, and the writer timed him at better than 96 miles per hour. This is very close to the record for the track.

Sunbeam Six Racers Have New Motors

NEW YORK, May 5—The Sunbeam six racer entered for the opening races at the Sheephead Bay motor speedway, May 13, has arrived at the track, and its driver, Joseph Christiaens, is tuning it up for the

race and getting accustomed to the track. The chassis of this car is the same that appeared in races in this country in previous years, but the motor is entirely new. Since its arrival at the Sheephead Bay track it has been possible to secure photographs showing both sides of the motor with its overhead valve mechanism, and these are reproduced herewith.

Details of specifications and equipment of the new Sunbeam motor which it was previously impossible to obtain are now available. The motor is a six-cylinder type with a bore of 81 mm. and a stroke of 150 mm., or $3\frac{1}{8}$ by $5\frac{7}{8}$ inches. One set of spark plugs is used, ignition being by a single Bosch magneto driven at three-quarter engine speed. There are two oil pumps, one for the ball bearing crankshaft and the other for the two camshafts. At present it has not been decided whether to use aluminum or steel pistons. The motor has



View of the left side of the Maxwell motor

a single breather pipe to each cylinder as shown in the illustrations.

There are four valves to each cylinder, making twenty-four valves in all. The camshafts are mounted overhead, the valves being set at an angle in the top of the cylinder head and the camshafts are driven by a vertical shaft and gears from the front of the engine.

Two carbureters are used, as shown in the illustration at the bottom of the page, with a separate intake manifold for the three forward and three rear cylinders respectively.

A four-speed gearset is employed and the gear reduction on direct drive is 2.7 to 1. There is a revolution counter fitted. The exhaust manifold is carried outside the hood and is pointed at the forward end.

The car has been driven for about fifteen laps on the Brooklands track in England but no high speeds were made due to the bad condition of the track caused by army trucks, and neglect.

The sixteen-valve Duesenberg motor used in the Crawford cars should also be of great interest in the coming race and in other events on the national circuit. This motor is the one which was experimented with last year but which was completed too late to be used in any of the events. It is built very much along the same lines as the eight-valve Duesenberg having the valves operated by long rocker arms on the side. These rocker arms extend up the side of the motor and act directly on horizontally-placed valves located above the cylinder.

The Duesenbergs

The Duesenberg motor stood up well in last year's races. At Indianapolis, the car driven by Alley suffered no trouble of a mechanical nature beyond a loosened exhaust pipe. O'Donnell stopped only three times at Indianapolis and his mechanical adjustments consisted of the replacement of a nut which had jarred off the brake bracket and a quick adjustment of the shock absorber. Mulford's Duesenberg

was put out of the race by a stripped direct drive clutch. On the whole these cars performed very consistently throughout the entire season and while they were not as fast as some of the other entries were generally in the money on account of their steady performance.

O'Donnell has been showing his heels to everything on the coast this season.

With the new sixteen-valve motors the same reliability should be acquired with an increased amount of speed due to the greater gas passages and a creditable performance is generally expected.

The Maxwells, of the Prest-O-Lite team, promise to be faster than ever.

The Mulford Special is out on the track without its complete body and is now going through a tuning-up process. The motor in this car discloses little from an exterior view. It is a square block in appearance, having four cylinders 3.98 by 6, giving a piston displacement of 299 cubic inches. The valves are operated by vertical rocker arms.

Gossip of the Speedways

Speed Trials at Gotham

Drivers Concealing Their Best Time By Slowing Up at the Pits Each Round

Many Doing Better Than 100 Miles Per Hour, However

NEW YORK, May 9—Special telegram—If the drivers are as wary at the time of the race as they are during practice on the Sheepshead Bay speedway in concealing their speeds, there will be some very clever driving. Although some of the fastest cars have been out on the track every day, it is almost impossible to clock them over a single lap owing to their persistence in slowing down along the stretch before crossing the finishing line. So far, most of the drivers have not endeavored to make any record laps around the track but have been traveling at a pace fast enough to assure them that the motors are working properly and that they will have no trouble in reaching the 90 miles per hour that will be necessary to qualify them for the events of May 13. The qualification trials will be held on Thursday and Friday and there will be no eliminations other than those made by the failure of cars to reach 90 miles per hour.

The Mulford Special developed engine trouble in the tuning up process and probably will not be in the race. Some of those who have been making the fastest laps are Dario Resta, Pete Henderson and J. Christiaens, all of whom exceeded 100 miles per hour. Christiaens is believed to have speed in excess of 115 miles per hour but the ex-French soldier has been as

clever in evading the stop watches as he was in evading German bullets on the battlefields of France.

Some times were snapped. Henderson, in the Maxwell, reeled off a lap in 1 minute, 9½ seconds, which is a speed of 104 miles per hour. Resta was timed in 1 minute, 12½ seconds, which is 99½ miles per hour. Jack LeCain was out with the Delage and Billy Chandler with his Crawford. James Devigne also had his Delage out and J. Christiaens made a lap at 100 miles per hour in his new Sunbeam.

It is expected that there will be a feature race between the twelve-cylinder Sunbeam owned by Adams Bros., and the Blitzen Benz owned by Harry S. Harkness.

Eddie O'Donnell and his Duesenberg are due here and are expected to do great work on the board track. O'Donnell will receive a warm reception from the drivers in camp here and everyone is eager to see the hero of Fresno on the track with his car.

MOTOR FIRM HOLDS BOYS' DAY

Detroit, Mich., May 6—The L. J. Robinson Co., handling Chalmers cars in Detroit, is confident of having won the friendship of several scores of boys who some day will be purchasers of motor cars. When the ceremonies were planned for the opening of the new building and showrooms of the Robinson company, it was not forgotten that the boy almost invariably has a voice in choosing the new family motor car, and therefore is as much interested in learning the essentials of motor operation, values and the distinguishing points of each machine. Small boys and big boys, boy scouts and boy chauffeurs-to-be spent an afternoon as guests of the dealer to the number of 2,000.

Reject De Palma Entry

Indianapolis Officials Refer Late Application to Other Entrants

Millionaire Buys Ralph's Mercedes and Asks to Drive in Race

INDIANAPOLIS, Ind., May 9—Ralph de Palma's request for permission to enter his big Mercedes in the 300-mile contest for the International sweepstakes at the Indianapolis speedway Memorial day, upon being referred to the other drivers in the race, has failed to receive ratification at their hands. De Palma is thereby barred from the race and the car which won the 500-mile event on the same track last year will not be a competitor.

After the entries had closed May 1 at midnight, de Palma wired the officials that he wished to enter the Mercedes. De Palma says the racer is sold to Frank P. Book, a wealthy young sportsman of Detroit, Mich., who is entered in the amateur race at Chicago, May 20. It was understood that Book was to drive the car himself at Indianapolis, though friends of de Palma have been speculating as to whether the Italian would be the relief driver and perhaps finish the race after Book had started.

To make it possible for de Palma to enter a car, the written consent of all other entrants would be required, according to the rules of the A. A. A. His application arrived 2 days late. The management knows the popularity of the Italian driver and was ready to accept the entry if the conditions imposed by

the rules would be complied with. General Manager Myers mailed letters to all those whose entries have been accepted.

Barney Oldfield put an end to the question by wiring a reply referring Myers to his entry blank. It was found that a notation had been appended by Oldfield in which he made the provision that no post-entry car should be allowed to start. It was unnecessary to await the replies of the other contestants.

PENNSYLVANIA GOOD ROADS DAY

Philadelphia, Pa., May 6—Counties and boroughs throughout Pennsylvania are organizing among themselves to observe good roads day, as announced by Governor Brumbaugh for May 25. This is the second good roads day in this state, and the idea has spread with such enthusiasm that it will be observed in many places as a general holiday. Many plants will close down for the day and business houses of all sizes will suspend for the day. Citizens' committees have been formed and motor clubs will co-operate to make the day something to remember.

Prize for 2-Mile Record

Chicago Speedway Hangs Up
\$1,000 for Best Lap of Season in 2-Mile Tracks

\$2,500 If Better Than 120 Miles
Per Hour Is Made

CHICAGO, May 8—A cash prize of \$1,000 has been announced today by the Speedway Park Association of Chicago to any driver who at the end of the season holds the world's 2-mile speedway record, providing this record is made on the Chicago speedway and in official time trials. The offer is open to any A. A. A. registered driver, whether American or foreign, and to any car of any displacement. The trials must be under the observation and rules of the American Automobile Association upon whose certificates of performance the award will be made at the end of the season.

This offer remains open until the close

of the Chicago speedway season, October 31. In the event that a record better than 120 miles per hour for one lap, that is, 2 miles in one minute, is made, \$1,500 will be added to the prize.

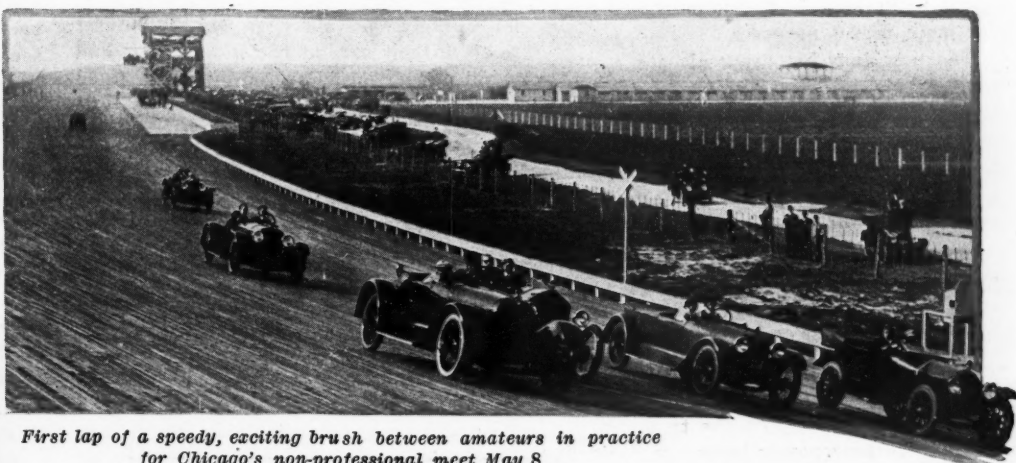
According to this, then, if the 2-mile speedway record for a distance of 2 miles is made on the Chicago track at 120 miles per hour or better, the driver wins \$2,500.

Any A. A. A. registered driver wishing to try for the record must give Speedway Park Association 15 days' notice and pay the expenses of the trial, unless the driver is invited by the speedway to try for the record in which case the expenses will be borne by the speedway. It is the intention to invite all of the more prominent drivers to try for the record.

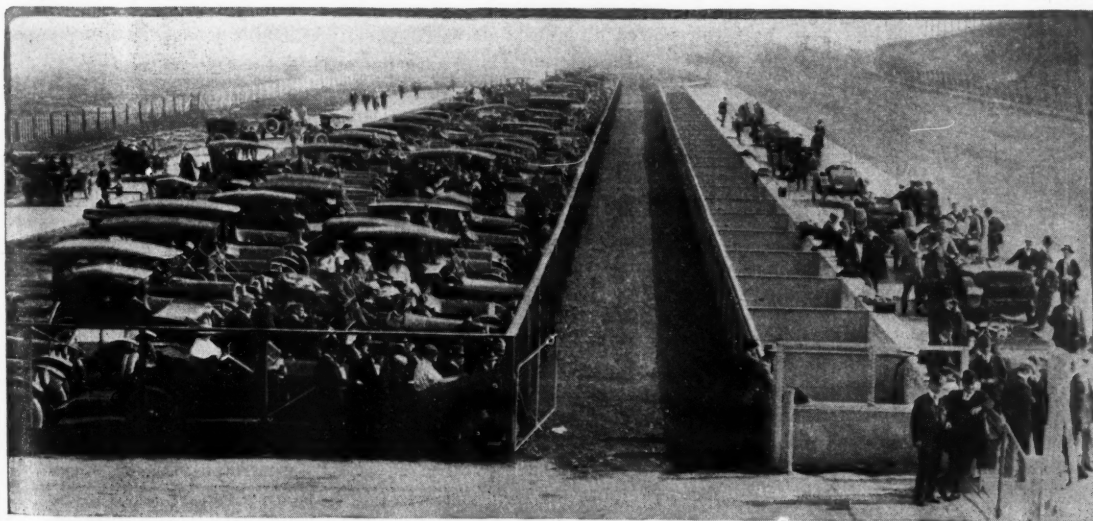
MOVIES FOR SPARTON EMPLOYEES

Jackson, Mich., May 8—After next week the management of the Sparton plant of the Sparks-Withington Co., of this city, will provide a free moving picture entertainment daily for the employees of the company. The shows will take place during the noon hour.

Amateurs in Practice for Non-Professional Race at Chicago



First lap of a speedy, exciting brush between amateurs in practice for Chicago's non-professional meet May 8



F. C. Sawyer, who made 80 m. p. h. Sunday on the Chicago track

Pit work by the amateurs in practice Sunday proved interesting to a big crowd of enthusiasts



E. F. Swift, Jr., a swift packer with a swift Marmon

Britain Asks That Cars Be Not Used for Pleasure

John Bull Needs Gasoline to Operate His Motors in Entertaining Mars

LONDON, April 20—With the importation of touring cars prohibited, a tax of 12 cents per gallon on gasoline, no benzol supplies, and a proposal, which will almost certainly become law, to triple present taxes, the position of British motorists is not at all enviable. Further, there is an active campaign against what is termed pleasure motoring, quite an appreciable amount of money having been spent in posters and other printed matter asking motorists not to use cars for purposes of pleasure.

As a matter of fact, motor cars have been very little used during the last 6 months for anything but utilitarian purposes, the high cost of gasoline and the all-round increased cost of living being quite sufficient to eliminate motoring for pleasure. Nevertheless, the effect of the official appeal has been to create an impression in the minds of the public that car owners are squandering money which ought to be kept in the country and used for more useful purposes.

The new taxation proposals are a very severe blow. It is officially announced that \$1,000,000 will be gathered in by means of these taxes, but as owners have the facility of storing their cars and thus avoiding the payment of the taxes, it is quite possible that the taxable material will disappear and that the object of the government will be defeated. This danger is so great that many are inclined to believe the taxes have been levied with a view to suppressing motoring rather than to getting additional revenue.

Taxes Are Doubled

Up to 16 horsepower taxes are doubled; from 16 horsepower and upwards they are trebled. The method of calculating horsepower is on cylinder bore only. A four-cylinder car of 2½ inch bore is less than 12 horsepower and normally pays an annual tax of \$15; up to 3½ inch bore is less than 16 horsepower and pays \$20 tax.

Up to 4 inch bore cars are rated at less than 26 horsepower and are normally taxed \$30. While in the two lower classes the taxes are doubled, in the third and all higher classes the tax is trebled. This strikes particularly hard at all the cheaper American cars, for, with the exception of the Overland model 75 and the small Saxon, these come into the third or higher classes and have to bear treble taxes. The Ford, which is in a numerical superiority in England, has to bear a triple tax. The following table shows the original and the new taxation on some of the leading American cars on the British market:

Old-type cars of any make, the value of

CAR	ORIGINAL TAX	NEW TAX
Ford	\$ 30	\$ 90
Overland 6-cylinder	40	120
Overland 83	40	120
Overland 75	20	40
Dodge	30	90
Buick D-54, 6	50	150
Buick D-44, 6	30	90
Studebaker, 4-40	30	90
Studebaker, 6-50	50	150
White, G. A. H.	30	90
White, G. E. D.	40	120
Saxon 14-15	20	40
Saxon S-2	30	90
Saxon 17	30	90
Pierce 66 A-4	100	300
Packard Twin Six	100	300

which is now very low, are so highly taxed that it is practically impossible for their owners to run them. There must be hundreds of old-type Panhards, Charbons, Mercedes, De Dion and other established makes, the value of which is less than \$300, but which on account of their big cylinder bore have a high rated horsepower and are taxed \$90 to \$150.

No Tax on Unused Car

Under the English law, if a car is not in use it does not pay taxes, thus it is quite likely that many owners will prefer to store their cars at the end of June and avoid paying the increased duty. In these cases the state will lose not only the car tax but also the gasoline and the annual driving tax. In drawing up the budget it appears to have been assumed that cars of 16 horsepower and above are all costly vehicles belonging to wealthy persons.

The fact has been overlooked that the horsepower rating is quite an arbitrary one, and that many a small-bore, long-stroke, high-speed European motor has a bigger cylinder capacity and develops greater power than a big-bore, short-stroke American car. As an instance, the 3.1 by 7.08 inch Hispano-Suiza is only rated at 15.9 horsepower, and will pay a \$40 tax, while a 3¾ by 4 inch Ford, which develops less than half the power and costs a third of the price of the French car, is rated at 22.4 horsepower and has to pay a \$90 tax. Scores of such examples could be quoted to show the illogical nature of the new taxation.

Motor car dealers are very hard hit. There are very few English cars available for the market, and all agents in consequence have been glad to take up agencies for American cars. Now that this source of supply is shut off, nothing remains for dealers but to close their stores. Many of the smaller dealers who were unable to get American business closed months ago, but the larger firms have managed to keep going until the present. Now such big firms as the Fiat company and the Renault branch have decided to close their doors. The value of used cars, particularly small models and modern types, is

strengthening; big, old-type cars have lost in value.

Reports, which were prevalent a few weeks ago, of the government control of gasoline, which would only be given out to those persons who could show a valid reason for motoring, are now receiving little attention. The prohibition of imports, the increased taxation and the high cost of gasoline are doubtless sufficiently restrictive measures. Motorists are still receiving very close attention in the matter of lighting regulations, headlights being forbidden in practically the whole of England and only feeble sidelights being permissible in most of the coastal area.

Motoring conditions in France contrast strangely with those of England. In a country where the war is being decided there are, outside the army zone, practically no restrictions on the use of cars. Unlike England, lighting regulations have undergone no change; taxation has not been increased, although a rise is promised for immediately after the war; the gasoline tax remains as before the war, although high freights and other causes have sent the price of fuel up nearly 40 per cent.

All motorists must register monthly with the police, but this measure is intended to weed out undesirables and not to restrict the use of cars. The whole of the army zone is rigorously and unconditionally closed to civilian motorists, but in the remainder of French territory it is possible to use a car with as much freedom as in peace times.

Few Cars Produced

Very few factories are producing cars for private consumption, although there are rumors that a few of the leading firms will shortly get a release from army orders permitting them to build for private customers. Too much importance must not be attached to this, for in very many cases the motor car factories are now so efficiently organized for the production of shells and other war material that it is more profitable to continue on the present work than to build cars for private use. During the last 12 months some of the biggest factories have been so completely converted and so thoroughly equipped for shell production that it would be unprofitable to build cars. The only advantage of car orders is that in some cases it enables old stock to be used up which could not be employed in normal and more critical times.

A certain demand has sprung up during the past few months for both touring cars and trucks of American construction. The

touring car demand is almost entirely dependent on military requisitions. If the army authorities visit a certain district and requisition the private cars to be found there, that district immediately becomes a buyer of American cars.

There are now very few cars in France not indispensable to their owners. Thus if the army steps in and purchases the cars, paying cash for them, the motorist immediately becomes a purchaser of an American car. There have been no requisitions in the Paris district for months, but from time to time the military purchasing authorities make it known that they are willing to buy cars privately. This becomes an ordinary cash transaction, the seller being free to accept or refuse the offer made him. In the provinces, requisitions are more common. The military authorities fix the price of the car, which is generally reasonable, and the owner must accept. It is only in the case of practically new cars with very costly bodies that the owner suffers a loss.

Agent for American Cars Active

Seeing that the net result of the requisitions is to increase the sales of American cars, the agents for these cars have endeavored to sell direct to the army. In this way the army, instead of the private motorist, would get American cars and the latter would not be subjected to any loss and inconvenience. While the army is quite willing to examine all offers made, and will cause sample cars to be stripped so that all details can be examined, there does not appear to be a single case of an order having been placed.

About 1,000 $\frac{3}{4}$ -ton American trucks were ordered some time ago for ambulance service, but not a single order appears to have been placed for American touring cars for general army work. It is certain that no orders can be got direct out of Paris, and if any business were done it would go through the buying commission in New York.

The American firms now doing touring car business in France are Ford, which easily heads the list, Buick, Overland, Dodge, Chevrolet, Maxwell, Mitchell and Saxon. It is understood that Ford will erect big factories near Southampton, producing there for the whole European market. This would free the cars from any import duties which may be imposed, for it is practically certain that there will be some preferential tariff among the Allies after the war.

Ford prices have been increased \$200 in order to cover higher freight and increased rate of exchange. The two Buick 6-cylinder models are being sold at \$2,100 and \$3,000, respectively. The Overland models are \$1,640 and \$1,860 each. The Dodge is sold at \$1,600.

Up to the present there has been no increase in the import duties on foreign cars, the rate being about 8 per cent of the value of the car. It is well known,

however, that French manufacturers are determined to defend their interests, and that they are working for a higher tariff. Reports are circulated in the trade that there will very shortly be a duty of more than 50 per cent on foreign cars, or a total prohibition of imports. The probabilities are that prohibition will be preferred at the present time to an increase in duty; it is certain that a tariff as high as 50 per cent will not be adopted. The arguments in favor of prohibition are the example set by England, the necessity of releasing freight for more necessary articles, and also of getting monetary exchange back to a more favorable rate. Although very little is heard of the conflict, it is certain that manufacturers are pulling hard for prohibition and that all the dealers and general trade element are working for a continuance of the present free market. The dealers have the strength of numbers; the manufacturers have the greater weight. It is impossible to say which party will get the victory, but it is certain that when a decision is reached it will be announced and executed immediately. Thus, if it is prohibition, dealers who have cars in shipment will be liable to a heavy loss.

The French motor car industry is a wonderfully organized section of the munitions department. There is not a factory but has increased either its ground area or its plant, or both. In the big factories the increase runs as high as 60 per cent. In the small shops the value has gone up not less than 200 per cent. Among these latter are garages and small repair shops which before the war possessed a small lathe and a drilling machine, but which are now very finely equipped machine shops capable of doing the best and most economical work.

There is a strong tendency to invest profits in additional plant and factory improvements for the future, rather than show a high profit now. In this way excess profits taxation is avoided or reduced. Machine tool supply houses report that they are receiving orders for machinery for which purchasers have no immediate use and do not require immediate delivery.

Not a few manufacturers are asking

what they will do with their enlarged and improved factories when the war is over. In practically all cases the original cost of the plant has been wiped off by war contracts, but work must still be found for it. The future is so uncertain that it is a most difficult matter for any manufacturer to decide what set of conditions he will have to meet and to prepare to meet those conditions.

Stand Against Competition

It is evident that allied motor car manufacturers will make a determined stand against foreign competition. All kinds of schemes are suggested, and while many of them have not and never will get beyond the talking stage, it is evident that common action is in contemplation. According to one well authenticated report a group of allied manufacturers, small in number, but representing powerful interests, will arrange to build in their respective factories a uniform type of cheap popular car on American lines to be sold at home and abroad at a price which will eliminate the American car of the same class.

These cars will differ only in the names they bear. There will be a clearing house, so that a shortage of any one make can be met by the other firms, and profits from these sales will be pooled. It is impossible to say what chances, if any, this scheme has of being put into execution. It is certain, however, that at least one powerful European firm has already produced a popular after-the-war model on American lines with the single exception that the motor dimensions are better adapted to European taxation conditions than are the dimensions of the average American engine.

PACKARD TEACHES EMPLOYEES

Detroit, Mich., May 8—A large number of former factory employes of the Packard Motor Car Co. have been promoted to positions in the engineering department, as the result of their study in the factory night school. A class of eighty has just completed the prescribed course in mathematics and mechanical drawing, and the students presented certificates. The enrollment is more than 150.



Gasoline in London ready for shipment to the front

City Inspects Gasoline

Tests of Oils and Fuels Made by
Los Angeles to Protect
Against Adulteration

Doping Evil Overcome in Year by
Close Regulation

LOS ANGELES, Cal., May 6—Public inspection of gasoline sold to motorists through the medium of a city oil testing laboratory is being successfully carried on in Los Angeles, which is the only city in the world that has thus far taken up the task of prohibiting adulteration of gasoline and enforcing a system of fuel oil testing. The large number of motor cars in Southern California, where the number of machines owned per capita is greater than in any other section of the country, has made it expedient for Los Angeles to adopt a system of municipal gasoline inspection.

How Inspection Is Made

The inspections has been carried on for the greater part of a year. The practice of adulterating gasoline with cheaper oils by unscrupulous garage men is believed to have been stamped out entirely. Refiners whose products failed to comply with the standards have been directed to improve the quality of their goods or refrain from selling in the city.

In the early part of 1915 the Los Angeles department of oil inspection drew up specifications for petroleum products, including gasoline, benzine, engine distillate, kerosene, stove distillate 33 degrees Baume, and furnace distillate 28 degrees Baume, and provided that such commodities sold by dealers within the city should comply with these standards. Refiners, marketers, jobbers, and retailers are included under the supervision.

Fractional distillation methods are used for analyzing gasoline and kerosene, with

additional flash, sulphur and acid tests for the latter. The gasoline specifications require that "70 per cent of gasoline shall distill over at a temperature not exceeding 260 degrees Fahrenheit; the residue remaining shall have a specific gravity not greater than .7887; i. e., not heavier than 47.5 degrees Baume." Both straight-run distilled gasoline and blended or compressor gasolines are admitted.

City inspectors are sent to filling stations, garages, refineries, grocers, and all points where petroleum products are sold.

GRANT MOVES TO CLEVELAND

Findlay, O., May 6—Announcement was made here today that the Grant Motor Car Corp. would remove from this city to Cleveland at once. Officials of the company say that the company has outgrown its quarters here and that the improved shipping facilities at Cleveland and better opportunities to secure labor of the kind needed are the reasons the change will be made. Seven acres have been purchased and contracts have been let for a \$200,000 structure to be occupied June 15.

MAXWELL SELLS ORPHAN BUSINESS

Detroit, Mich., May 9—The Maxwell Motor Co. has sold to the Standard Motor Parts Co., a newly organized concern, the entire stock of parts for the several makes of cars formerly manufactured by the old United States Motor Co. These include the Columbia, Alden-Sampson, Brush and Stoddard-Dayton. The Standard concern takes over the manufacture of these parts and their sale and will give service to the owners of these machines.

According to the Maxwell company, this does not mean that the Maxwell cars will be handled through the new company, but simply the orphan cars, the task of supplying service and parts for which the Maxwell organization has shouldered at its Newcastle and other plants since the entire parts business of the company was centered here several years ago.



Somebody is always taking the joy out of life. Fred Merkle's great drive in the eighth inning of the game at the Polo Grounds, New York, on Saturday, April 29 dashed the hopes of a bunch of other big league hitters to the ground, for that hit won the car—an Overland Six—offered by C. T. Silver to the first player hitting a sign of his back of left field. Mr. Silver made a like offer last year, but the sign was not hit. In his anxiety to have one of the players win the car he made it comparatively easy this season. He had his sign moved 50 feet nearer the foul line in the left field and just that much nearer the plate. Merkle's swat carried 342 feet on the fly to win the car. Thirty thousand people saw him land on Tom Silver's sign, and they gave a roar of delight when they realized that he had won the car.

Motors in Sham Battle

A. R. C. Battalion Aids Militia
in Quelling Attack Upon
Utica, N. Y.

Seventeen Cars in Military Drive
Cover Strategic Points

UTICA, N. Y., May 5—War was declared in Utica for one day and emergency military measures of defense worked out in the practice maneuvers of a motor car battalion, April 30. Under command of the officers of Company B of the First Infantry, New York national guard, the motor reserves dashed 22 miles through the Mohawk valley to afford relief for the Remington Arms plant at Ilion, N. Y., and the factory of the Savage Arms Co., at Utica, which were besieged by imaginary enemies. The militia and motor reservists met and routed the hostile forces in an uproarious sham battle.

East of Utica, just after the drive began, the boys in khaki encountered the outposts of the fictitious enemy and burned 1,200 rounds of blank cartridges. First the motor cars, seventeen in all and strongly manned, gathered at the armory in Utica, where the militia had responded to a call issued without explanation as to the purpose of the officers.

When the theoretical attack of the enemy was made upon the arms plants, the commanding officers of the national guard were notified. According to the scheme of the maneuvers, the men were given no previous warning. The motor cars were supposed to bring the men from their homes to the armory as the first step in rapid mobilization. Actually, however, the men reported at a given hour, and just 45 minutes after the first summons was received, the motor car column drove off to cover the strategic points in the Mohawk valley. Less than half an hour later the infantry was engaged in battle with the enemy on the outskirts of Utica.

Sixteen Studebaker cars and one repair car, also a Studebaker, composed the motor equipment. Andrew K. McLuney, assistant secretary of the Automobile Club of Utica, and agent for the Studebaker in the Utica territory, co-operated with the commanding officer of the militia, Captain Sherman. A motor reserve corps of twenty machines will probably be organized to participate in the maneuvers of this kind to be held May 21, at Long Island, N. Y.

COUNTY VOTES \$500,000 FOR ROADS

Chicago, May 6—Roads leading into Chicago from many directions are to undergo extensive improvements as a result of the board of county commissioners of Cook county approving an appropriation yesterday which creates a fund of \$500,000 for road construction. Seven highways will

be paved with concrete and five others with asphaltic concrete or macadam base. These are roads extending from the outskirts of the city of Chicago to the county line, including the Fort Madison road, the Rand road, the Ballard road and the Archer road. The county voted \$100,000 for state aid roads. An equal amount will be given by the state under the road statute. The remaining \$300,000 will be furnished wholly by the county.

NATIONAL GAS ENGINE PROGRAM

Lakemont, N. Y., May 10—William N. Hurley, vice chairman of the federal trade commission, and Dr. W. C. Huntington, commercial agent with the bureau of foreign and domestic relations, Washington, D. C., will be the speakers at the dinner of the National Gas Engine Association when the annual meeting is held in Chicago, June 27 to 29. The following papers will be read: "Tractor Engines," W. J. McVicker; "Tractor Design," William A. Horthy; "Tractor Drawbar Ratings," Raymond Olney; "Tractor Designing from the Automobile Designer's Viewpoint," William McGlashan; "The Data Work," P. S. Rose; "Ignition Selection," Harry G. Osburn; "The Heavy Oil Engine," speaker announced later; "Reducing Shop Costs," Theodore C. Menges; "The Fuel Situation," E. E. Grant; "Carburetion," E. E. Dean; "Liquid Fuels, Present and Future," E. W. Roberts.

TRACTOR SHOWS WITHOUT MEDALS

New York, May 6—There will be no competing for medals by tractor manufacturers at the tractor farming demonstrations to be held this year in eight sections of the United States, under the auspices of the National Power Farming Committee. Nor will blue ribbons be awarded to the tractor which finishes its land first, or performs the most spectacular stunts. Demonstrations will not be limited to plowing. Opportunities will be afforded to exhibit the work of disking, seeding, packing, manure spreading, and operating all other kinds of power equipment found on the average farm.

\$4,000,000 FOR KENTUCKY ROADS

Louisville, Ky., May 6—Kentucky will spend \$4,000,000 this year in road building under the state aid plan. Work has already been started in twenty-five counties and applications for state aid from 103 counties have been approved. The state has been divided into thirteen districts, each under the charge of a federal or state engineer, who will be the court of last resort in the matters of contracts and construction. In three counties, Madison, Bath and Harlan, convict labor will be employed.

At an average cost of \$2,500 a mile, there should be built this year some 1,600 miles of road, making a total of 2,400 miles for the years 1915 and 1916, something over a third of all the state roads.

Senate Passes Road Bill

Bankhead Measure Reaches An Agreement Point As Substitute for Shackleford's

Post Roads Will Be Given Impetus if It Passes and Becomes Law

WASHINGTON, D. C., May 9—Special telegram—Federal roads legislation in the present Congress now rests with the conferees of the Senate and the House of Representatives, with indications that an agreement is practically assured. The Senate has just passed the Bankhead bill, named after the chairman of the committee on postoffices and post roads, while the House previously had accepted the Shackleford bill of its committee on roads.

Both measures had their basis in a draft prepared by the American Association of State Highways officials, which had the indorsement of the American Automobile Association and other organizations interested in highways improvement.

The House bill omitted some things which the Senate committee considered should be included, and one of these was area as one of three factors in the distribution of the federal money appropriated, population and post road mileage being the other items. The answer of the Senate committee was a substitute measure which did not suffer much revision under discussion, except that a rider was tacked on by the insistence of the western senators providing for \$1,000,000 annually for the purpose of constructing roads and trails in the National Forest Reserves. They argued that a forest with-

out roads, besides its being practically inaccessible, is, for that reason, in greater danger of destruction by fire, and that roads will help to open the forests.

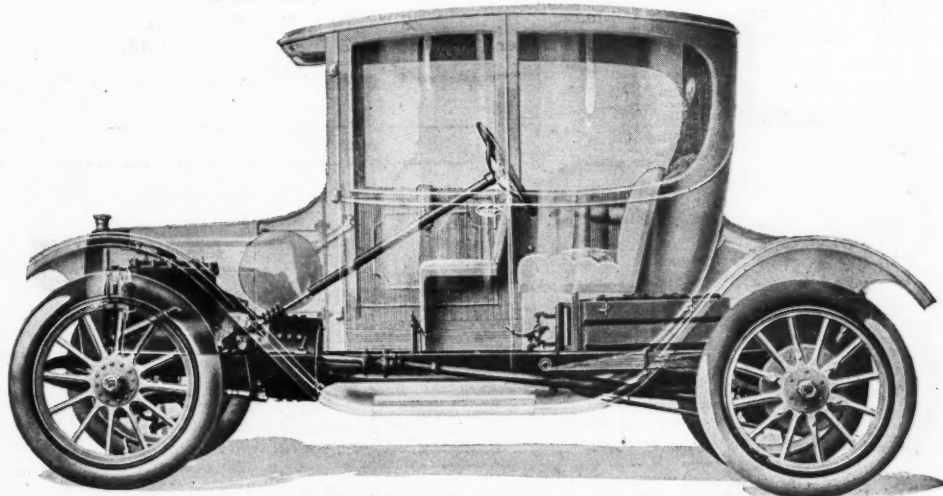
30-CENT FUEL IN EAST

New York, May 8—Motorists are still paying from 27 to 31 cents a gallon for gasoline in the East, the retailers taking a profit of from 3 to 7 cents, according to the location of the garage and the overhead expenses.

The price has remained stationary so long that the opinion is frequently expressed that a change must come soon. It is now fully two months since the advance stopped, while all the factors in the situation appear to point to a further rise. Activity in the oil fields has failed to uncover any large wells.

Present gasoline consumption in the United States is estimated at 1,500,000,000 gallons a year, and with the constantly increasing demand for gasoline, it is figured that domestic consumption will increase at the rate of about 500,000,000 gallons a year.

Announcement was made last week that the Maxim Munitions Corp. had closed a contract for the exclusive manufacturing rights of Louis Enricht's substitute for gasoline. On top of this announcement came the description of another fuel formulated by Lewis Morrison, of Yonkers, N. Y. Like the Enricht plan, Mr. Morrison's scheme is one to operate the motor with hydrogen generated in the car. Mr. Enricht claims that he decomposes the water, thereby obtaining his hydrogen, a process which has never yet been demonstrated, while Mr. Morrison generates his hydrogen by the union of water and a chemical. The chemicals he uses are ammonia and metallic sodium.



NEW WOODS DUAL-POWER GAS-ELECTRIC IN X-RAY

This is the first illustration ever offered of the new design of the Woods Motor Vehicle Co., Chicago, which is a combination of electric and gasoline car, the general features of which were published in Motor Age issue of January 27. The power plant consists of a small gasoline motor and an electric motor-generator combined in a unit. Either the gasoline motor alone, the electric motor alone or both together may be employed to propel the car. The engine operates a generator to keep the battery charged. The movement of a finger lever on the steering wheel connects the gasoline motor to the electric motor generator. The car starts as an electric and can be run as an electric up to 20 miles an hour and for a distance of 35 miles; or, after starting as an electric, it can be run as a gasoline car.

Tires, Their Care and Repair—Part VI

Lining Up Wheels to Save Tire Wear—The Importance of This Factor—One That Cannot Be Neglected

Herewith is printed the sixth and last installment of a series on the care and repair of tires, the first of which appeared in the April 6th issue of Motor Age. The present installment explains in detail the proper methods of lining up the wheels so that the tires will wear evenly. This is an important feature, quite the most important of all, if one wants tire longevity.

AMONG the factors which have an intimate relation to the mileage obtained from a tire is the alignment of the wheels, front and rear. The front wheels especially require attention, and should be tested at regular intervals in order to detect any variation from the proper position.

Motor car manufacturers have supplied Motor Age with the facts regarding the alignment of the wheels in their respective cars, the toe-in, camber, and suitable methods of checking up the dimensions, or making adjustments to correct mis-alignment. Nearly all of the manufacturers recommend that an examination of the car for this purpose be made after every 4,000 or 5,000 miles, or oftener. If a car has been subjected to a severe jolting, has struck the curb heavily, or has made a run over an unusually rough road, the wheels may have been thrown out of alignment, though only slightly, and immediately result in excess wear on the tires.

Lining Up Shown in Diagram

The diagrams reproduced herewith illustrate the general scheme which is followed in lining up the front wheels at the factories. The various makers allow for camber of from $1\frac{1}{2}$ degrees to 5 degrees, a practice which is intended to bring the points of contact of the tread with the road as nearly under the steering knuckle

pivot as possible, which is theoretically the position for easiest steering.

The wheels of different cars toe in usually about $\frac{3}{8}$ inch, which is usually enough to correct the tendency of the wheels to toe outward when the car is moving. If the wheels toe in too much, or not enough, the front and rear wheels will not track properly and this condition will grind the tread with every revolution of the wheels and bring about serious damage.

If the axle has been bent in a mishap, even though the divergence is not visible, the sliding of the tire will occur and inevitably cause rapid wear. Instances are not infrequent where tires that were prac-

tically new have been worn to the fabric in 400 or 500 miles simply because the front wheels were not in alignment.

Several companies recommend that both front and rear wheels be tested and the alignment corrected by means of jacking up each wheel and placing a stationary point almost against the felloe band, next revolving the wheel to determine if the distance between the stationary point and the rim is the same at all points on the circumference. If the point rubs the felloe band on one side of the wheel and not the other, this is an indication that the wheel is not running true. The trouble probably is in the bearings.

What Car Makers Advise

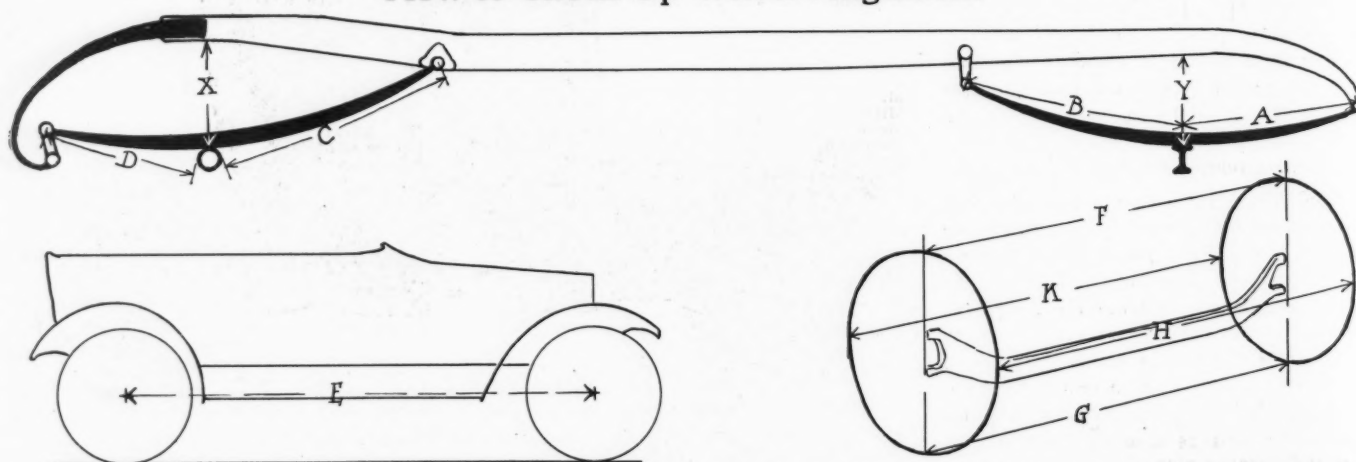
Abbott-Detroit

DETROIT, Mich.—On Abbott-Detroit cars the rear axles are placed in such a condition of alignment as to make the axle exactly at right angles to the center line of the chassis and cannot be thrown out of true except due to shock such as might be received in collision or accident, and as a means of checking up to see whether or not the axles hold true or whether, due to slight shocks such as might be received in skidding, etc., they have been thrown out of true, we would suggest as a rough and ready method that the owner be instructed

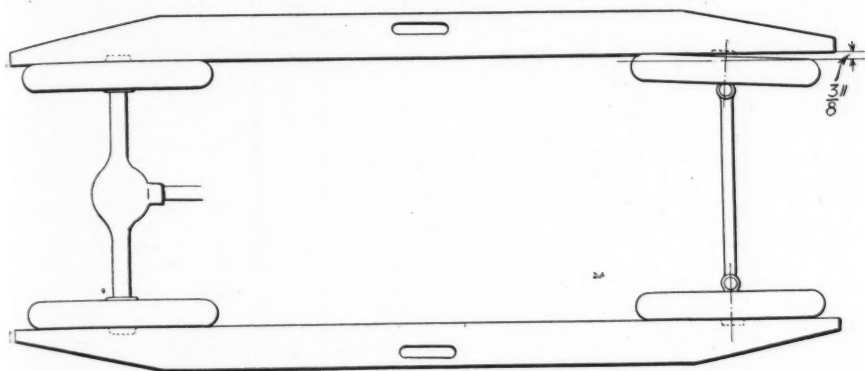
to measure from the center of the bolts which attach the rear legs of motor to the frame brackets, back to some point on the ends of the axles, such as the center of the hub caps, center of the axle tubing or any similar points. These two distances on the two sides of the car should be the same within a small fraction of an inch.

In regard to the front wheels, it is, of course, possible for the front axle to be bent and still preserve proper alignment of the wheels, this being done by proper adjustment of the cross bar of the steering mechanism. However, as regards the angle of the wheels, we set all front wheels so

How to Check Up Wheel Alignment



IT is hoped that this article of the series on the care and repair of tires, which discusses the cost and prevalence of misalignment of wheels, will induce many of the readers to look to their steering for the sake of their tires. In order to assist them in checking up the alignment of the wheels and in locating any misalignment, Motor Age shows in the diagram below the points where the measurements should be taken. In the upper sketch and the one on the left, all the lettered distances should be measured in duplicate. That is, the distance A from frame horneye to the front axle should be the same for the right front spring as for the left front spring. These should be measured with a stiff straight-edge of some sort—not a tape. The distance E is the first and most important measurement. The lower right-hand sketch is to test the alignment of the front wheels. Distances F, G, H and K are measured from the center of the tread. H should not be greater than K and not more than $\frac{3}{4}$ inch less; G should not be greater than F and not more than $\frac{3}{4}$ inch less.



At the left is shown how to measure distance from hub to hub with a straight-edge and to the right are views of the front wheels from the top and from the rim, showing camber, gather and draw that is necessary to give longer life to your tires

that the tires toe in in front. By measuring straight across from felloe band to felloe band at the rear and at the front sides of the wheels, the dimension across the felloe bands at the front sides should be $\frac{3}{4}$ inch less. We build our front wheels so that the wheels instead of standing vertically, form a 2 degree slant; that is, a line through the center of the wheel from where it touches the ground to the top, slopes outward at an angle of 2 degrees with the vertical. This alignment of front wheels we are very particular about and we find that it gives excellent results as regards steering qualities of the car and tire mileage.—Consolidated Car Co.

Buick

Flint, Mich.—The Buick Motor Co. adheres to the following specifications in determining the toe-in and camber: The distance between the inner sides of the felloe bands on front wheels at the lowest point is 56 inches on the standard models. The measurements above that point therefore vary according to the size of the wheel. The gather is $1\frac{1}{8}$ inch on Model O 44-45, fitted with 32 by 4 inch wheel, of $1\frac{1}{2}$ inch when fitted with 34 by 4 inch wheel. In both cases the toe-in will be $\frac{3}{8}$ inch to $\frac{1}{2}$ inch. Model D 55 with 36 by $4\frac{1}{2}$ inch wheels has 1 9-16 inch camber and toe-in of from 3-8 inch to $\frac{1}{2}$ inch. Model D 4 with 34 by $4\frac{1}{2}$ inch wheels has 1 7-16 inch camber; toe-in of $\frac{3}{8}$ to $\frac{1}{2}$ inch.—Buick Motor Co.

Cadillac

Detroit, Mich.—In our instruction book for Cadillac owners we give very complete instructions relating to tires.

The front wheels on our cars are set to toe-in about $\frac{3}{8}$ inch. The driving strain on the control rod and steering control rod when a car is under motion has a tendency to straighten the wheels up when the wheels toe-in $\frac{3}{8}$ inch so that under this strain they are practically running straight. The wheels camber about $1\frac{1}{2}$ inch.—Cadillac Motor Car Company.

Chalmers

Detroit, Mich.—The front wheels on the Chalmers model 26 6-30 are cambered so that the distance along the ground between the treads is 56 inches, and from the center of the tires at their highest point, 58 $\frac{3}{4}$ inches. The spindles are set at an angle of 2 degrees from the center line of the I-beam of the axle. The front wheels toe in from $\frac{1}{8}$ inch to 3-16 inch. This adjustment is obtained by means of the front axle cross steering rod. The alignment of

the rear axle can be kept true by attention to the spring clips and having them tight at all times.—Chalmers Motor Co.

Chandler

Cleveland, O.—We are having very little trouble with wear and tear on tires due to poor alignment of wheels. We figure on a standard toe-in of from $\frac{1}{4}$ inch to $\frac{3}{8}$ inch in the front, the idea being to prevent a tendency of the car running off the crown of the road, and therefore relieving the steering pressure to keep the car straight. Our rear wheels are supposed to be perfectly square with the road, and naturally

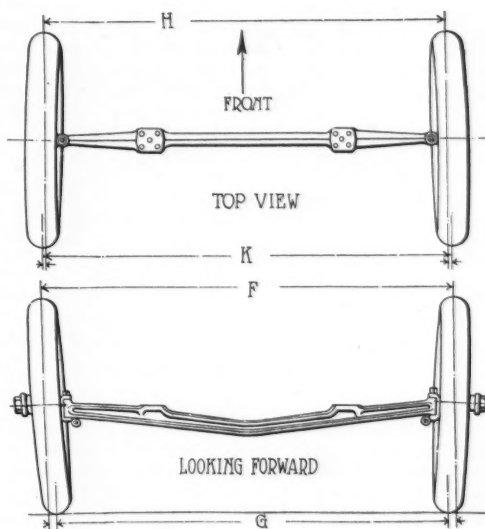
PROPER CAMBER AND TOE-IN

CAR	TOE-IN F-G	CAMBER K-H
Abbott-Detroit.....	$\frac{1}{2}$ in	
Buick D-44-45—		
32 by 4 wheel.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	$1\frac{1}{8}$ in.
34 by 4 wheel.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	$1\frac{1}{8}$ in.
Buick D-55.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	$1\frac{1}{8}$ in.
Buick D-55.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	$1\frac{1}{8}$ in.
Cadillac.....	$\frac{3}{8}$ in.....	$1\frac{1}{8}$ in.
Chalmers.....	$\frac{1}{8}$ to $\frac{3}{8}$ in...	2 deg.
Chandler.....	$\frac{1}{4}$ to $\frac{3}{8}$ in...	
Cole.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	
Dodge.....	$\frac{1}{2}$ in.....	
Dort.....	$\frac{1}{4}$ to $\frac{3}{8}$ in...	2 deg.
Ford.....	0 to $\frac{1}{4}$ in...	3 deg.
Franklin.....	0 to $\frac{1}{4}$ in...	
Glide.....	$\frac{3}{8}$ in.....	
Grant.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	
Haynes.....	$\frac{3}{8}$ in.....	
Hudson.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	
Hupmobile.....	$\frac{1}{4}$ in.....	
Jackson.....	$\frac{3}{8}$ in.....	
Jeffery.....	$\frac{3}{8}$ in.....	
King.....	$\frac{1}{4}$ to $\frac{3}{8}$ in...	2 $\frac{1}{2}$ deg.
Locomobile.....	$\frac{3}{8}$ in.....	
Marion.....	$\frac{3}{8}$ to $\frac{1}{2}$ in...	
Maxwell.....	$\frac{3}{8}$ in.....	$1\frac{1}{8}$ in.
Mitchell.....	$\frac{3}{8}$ in.....	$1\frac{1}{8}$ in.
Moon.....	$\frac{3}{8}$ in.....	
Overland.....	$\frac{3}{8}$ in.....	
Packard.....	$\frac{1}{18}$ to $\frac{1}{8}$ in.	
Paige-Detroit—		
34 by 4 wire.....	$\frac{3}{8}$ in.....	.5 deg.
32 by 4 wire.....	$\frac{3}{8}$ in.....	.5 deg.
Peerless.....	$\frac{3}{8}$ in.....	.2 deg.
Pilot.....	$\frac{3}{8}$ in.....	
Saxon.....	$\frac{1}{2}$ in.....	
Westcott.....	$\frac{1}{8}$ to $\frac{3}{8}$ in...	

true with one another. This is easily checked with a square and straight edge and a satisfactory way is to put a string completely around the car allowing $\frac{1}{4}$ inch toe-in in the front. If this string is held central with the hub caps or axles, it will give one an excellent idea as to the tracking of his wheels.—Chandler Motor Car Co.

Cole

Indianapolis, Ind.—We toe-in our front wheels, having the center of the tires at the front $\frac{3}{8}$ inch to $\frac{1}{2}$ inch narrower than at the rear. We also line our axles up, by having the axles square with the frame, and check the wheel base from center to



center of wheels, so that it is the same on both sides.

We do this through our inspection department; that is, we hold the frame square, also the position of spring hangers the proper distance from the front spring eye. We inspect our frame, measuring all parts of the frame and brackets, from the front spring eye, which is our locating point. We also have a very close limit on the center bolts of the springs; this of course, is what locates the axles. We check all our cars on final inspection for this toe-in and squareness of the axles.

Our method is checking the center line on the front axle from the center of the front spring eye, also checking the wheels from hub to hub centers and measuring across the car from inside to inside of felloes.—Cole Motor Car Co.

Dodge

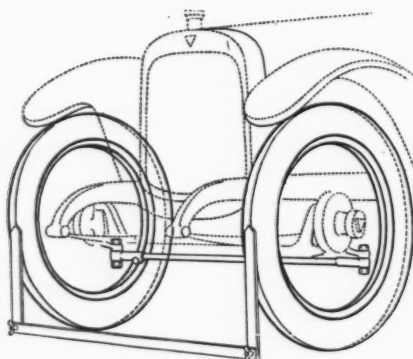
Detroit, Mich.—The position of the front wheels of Dodge cars can be regulated by the adjustable cross connecting tube. The proper position is when they toe-in not to exceed $\frac{1}{4}$ inch. This can be obtained by adjusting the cross connecting tube so that the distance between the inside faces of the front wheel felloes, measured at the height of the wheel hubs, is not greater than $\frac{1}{2}$ inch more at the rear than at the front. These dimensions should be checked up about once every 5,000 miles or after any obstruction has been struck violently by either of the front wheels. If, at any time, the front tires show excessive wear, this position should be checked up immediately and the proper adjustment made. All that need be done is to disconnect the right hand end of the cross connecting tube and make the proper adjustment with the adjustable yoke at this end, making sure to lock it securely in position with the locking cap screw after this has been done.—Dodge Bros.

Dort

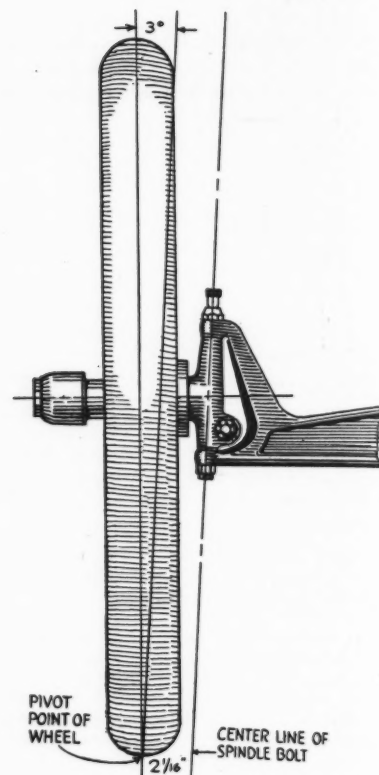
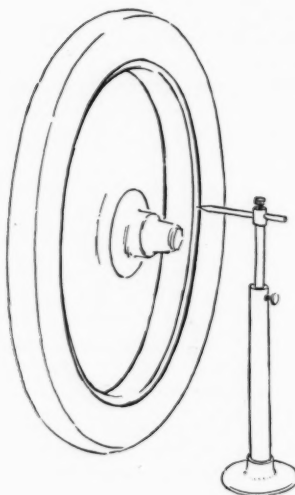
Flint, Mich.—On the Dort car we close in the front part of the wheels between $\frac{1}{4}$ and $\frac{3}{8}$ of an inch, the spindle of the wheel is set to an angle of 2 degrees perpendicular to the center of the king bolt.—Dort Motor Car Co.

Ford

There are differences of opinion as to what constitutes abuse of the steering system and it would be well to remember that this question usually decides itself. The fact that the wheel alignment is altered is conclusive evidence of abuse and should be taken as such. It is also possible for this



The diagram at the left shows how Maxwell lines up its wheels. In the center is another plan for determining when wheel is true and at the right is shown the exact measurements of a Ford wheel when properly in alignment



condition to exist without the knowledge of the driver, as a bump of any kind, when the wheels do not take up the shock simultaneously, as in a deep rut on one side and none on the other, is sufficient to materially change the wheels in their relation to each other.

In a great many cases the shock has been distributed in such a manner as to make it hard to locate the exact spot that is affected, unless measurements are checked up. It is a desirable precaution for Ford owners to occasionally have the wheel alignment of their cars checked up in a Ford branch or agency.

For the benefit of Ford owners who are obliged to make their own repairs the following information will doubtless prove valuable: The front wheels are set at an angle of 3 degrees; i. e., the distance between the tops of the front wheels is greater than between the bottoms. This is to obtain ease in steering. The wheels should not, however, toe in at the front, at least not more than $\frac{1}{4}$ inch, and lines drawn along the outside of the wheels when the latter are straight in a forward position should be parallel. A plumb line dropped through the spindle bolt should strike the ground just $2 \frac{1}{16}$ inches from the pivot point of the wheel, as seen in the accompanying diagram. Adjustment of the front wheels can be made by turning the yoke at the left end of the spindle connecting rod to draw the wheels into a parallel position. If inspection shows that the axle or the spindles are bent it will be necessary to have those parts straightened or replaced before correct alignment can be secured.

The rear wheels must also come in for some attention and if the lock nuts on the ends of the axle shafts are not kept properly tightened, play will develop which will not only damage the shafts but will result in the wheels running out of true with consequent wear on the tires. After the owner realizes the importance of keeping wheels properly aligned, he will get better tire service at a lower cost.

Franklin

Syracuse, N. Y.—We allow Franklin front wheels, when measured horizontally between the rims, through the center of the wheel, parallel to the ground, to either measure the same at these points or toe in $\frac{1}{4}$ inch. The front and rear wheels should be lined up so that the two rims touch at four points when a straight edge is laid along the side of them as they stand for driving straight ahead.

We also find that the amount that a wheel is out of true, either sidewise or radially, has considerable effect on the wear of tires. Our inspection limits on rims mounted on

finished wheels allow $\frac{1}{8}$ inch out of true sidewise or radially. These we find to be about as good as the best wheel makers can guarantee.

Of course, probably one of the greatest factors in tire life is the amount of unsprung weight carried by each tire. This should be the very smallest amount possible as we figure that every pound of unsprung weight is equivalent to at least 10 pounds of weight above the springs.—H. H. Franklin Mfg. Co.

Glide

Peoria, Ill.—In lining up the front wheels on the Glide light six-40 the wheels are toed in about $\frac{3}{16}$ inch. We have found through experience that with this setting we obtain the best possible steering and the longest life on the tires. Theoretically of course the wheels should be perfectly parallel, but in practice with our cars a gathering of the wheels of $\frac{3}{16}$ inch works out perfectly. It is necessary that the front and rear wheels be in perfect alignment; by this is meant that the wheels should track.

It is practically impossible for the Glide light six-40 wheels to get out of alignment except when the frame is sprung through some accident. The springs are securely fastened to the axles and cannot shift, and, as long as they do not shift, the wheels are bound to be in line. It is well to notice the spring clips occasionally, especially when the car is new, and to try a wrench on the spring clip nuts to see if they cannot be tightened up, because it is essential that the spring clips be tight, not only to keep the springs from shifting but also to prevent them from breaking. By far the greatest number of cases of spring breakage are due to loose spring clips.—Bartholomew Co.

Grant

Findlay, O.—It has been our practice to give the front wheels on Grant sixes the fore gather direct on the center line of the wheels of from $\frac{3}{16}$ inch to $\frac{1}{4}$ inch and all our cars leave the shop so trammed. We are careful to tram from the fellow of the wheel or the wheel rim, and in from the tires. We then spin the wheels to see that the tires run true, as there is the possibility with demountable rims of the wedge type of obtaining a considerable degree of wobble in the tires if the wedges are not pulled up equally.

We have found the $\frac{3}{16}$ inch to $\frac{1}{4}$ inch fore gather to be very satisfactory, the idea, of course, being to compensate the wheel and spring in our cross tie rod and steering cross connections.

Our rear axles also are trammed the same way except that the distance of both front and rear must be the same; that is, the

wheels should lie parallel. In tramping the front wheels we are very careful to see that both wheels are directly ahead. Our rear axle is of a long third member type and is located by the rear end of the cantilever springs. Our motors being set to jig and as a third member on the axle is long very little variation can occur by the wheels not correctly lining up with the center line of the car.

Our axles are also carefully inspected to see that the third member is at right angles to the axis of the wheels and any variation from true is taken up on the triangulation or hound rods. Our experience has shown that the Grant is very light on tires providing the front axle is properly lined up.—Grant Motor Car Corp.

Haynes

Kokomo, Ind.—The proper adjustment of the front wheels on the Haynes light six cars allows $\frac{5}{16}$ inch toe-in. The difference between the top and bottom dimensions of the wheels is $1\frac{1}{2}$ inch, the bottom having the smaller dimension.—Haynes Automobile Co.

Hudson

Detroit, Mich.—Because the alignment of the wheels is an important factor in the life of the front tires, the distance rod is provided with adjustments. On the Hudson Super-Six the front of the tires should be about $\frac{5}{16}$ inch closer together than the rear, measured at the same height from the ground.

The easiest way to check this adjustment is as follows: Jack up the front of the car from the center of the axle so that the distance rod is not interfered with. With both wheels free to revolve, a center line can be marked on each tire by holding a soft lead pencil against it when spinning. The pencil must be held steady or the result will not be a straight line.

Next, measure with a tape or stick the distance between these lines at a point opposite the hub; turn the wheels half a revolution and measure again. The distance between the two results is the average, allowing for a slight wobble, and should be

5/16 inch to $\frac{3}{8}$ inch less than the distance measured in the same way at the rear.

The handiest way to check this alignment is with the distance stick shown in the illustration.—Hudson Motor Car Co.

Hupmobile

Detroit, Mich.—We are well aware that improper alignment of front wheels causes a great deal of excessive tire wear which owners of various cars are experiencing and in many cases are blaming the tires rather than their own negligence in not checking up the alignment of the wheel.

Loosen the adjustment on the cross rod in back of the front axle, place a straight measuring stick, long enough to reach from one wheel to the other, with the end at the inner rim of one of the wheels on a line with the horizontal central line at the hub of the wheel. The end of the stick may be placed near the inner edge of the wooden felloe of the wheel, the other end passing between the spokes of the opposite wheel. Mark with a pencil the distance from one wheel to the other, then place the measuring stick at the extreme diameter of the two wheels, or in other words, if the first measurement is taken at the front end, the stick should be next placed at the rear of the wheels.

The distance at the front should be about $\frac{1}{4}$ inch less than the distance at the rear. This measurement gives the proper amount of toe-in, or conversion necessary to permit the wheels to track properly, due to the pitch or camber of the steering knuckles.

This condition is also caused by the bent front axle or steering knuckle, which has been injured at some time previous, and if the above test does not obtain the necessary results we then suggest that the owner check up the front axle and steering knuckles to see that they are not other than standard.—Hupp Motor Car Corp.

Jackson

Jackson, Mich.—The principal instructions which we give to owners in this regard are concerning inflation. This seems to be the point that is most neglected. However, it is true that many owners and unfortunately a good many garage men do not understand aligning the front wheels properly. Our practice at the factory is to give the wheels $\frac{3}{8}$ inch gather, measured at the felloe band. The only way we know of approximating this at the average garage, which is not equipped with a tram for taking this measurement, is as follows: Sighting with the eye along the outside of the tires on the right side of the car, turn the steering wheel in such a position that the right front wheel is precisely in line with the right rear. Then measure $3\frac{1}{2}$ or 4 inches directly out from the left rear tire, assuming of course, that the tire is standing perfectly straight on the floor and is not bulging out from under-inflation. Then by sighting along the outside of the left front wheel, the outside of the left front tire should be in line with this point. This system, of course, can be checked by figuring the diameter of the wheel and the length of the wheelbase on the car. For a car with the wheel diameter of our 32x4's, wheel base 112 inches, the point of intersection should be $3\frac{3}{4}$ inches from the left rear wheel.—Jackson Automobile Co.

Jeffery

Kenosha, Wis.—The careful owner of a Jeffery model four, 462, will make a habit of frequently observing whether anything has happened to throw the front wheels out of alignment. If the wheels are out of line, the tires wear rapidly. At the left end of the steering knuckle connecting rod, behind the axle, is an adjustment. Remove the bolt, loosen the lock nut, push the tie rod from you, clearing the steering knuckle arm.

The tie rod can be lengthened by turning the yoke to the left, and shortened by turning to the right. Adjust the rod so that the wheels measure about $\frac{3}{8}$ inch less across the front on a level with the hub than across the rear on the same level.—Thos. B. Jeffery Co.

King

Detroit, Mich.—We machine the spindles for the front wheel so that the wheel has a cant of $2\frac{1}{2}$ degrees, so as to bring the point of contact of the tire as nearly under the center of the king bolt as possible, thus reducing the load couple on the king bolt bushings, and we aim to adjust the tie rod so that the wheels toe-in from $\frac{1}{4}$ inch to $\frac{3}{8}$ inch, or, in other words, so that the distance between the center of the tires at the front is $\frac{1}{4}$ inch to $\frac{3}{8}$ inch less than the distance between the center of the tires back of the axle.—King Motor Car Co.

Locomobile

Bridgeport, Conn.—Our cars are very carefully assembled and tested, much more so than is possible with a lower priced machine, so that we are practically certain the wheels are in alignment and running correct and true in every way. There is scarcely a possibility of a car getting out of order except through some kind of an accident. In general we have had little trouble. Our front wheels have $2\frac{1}{2}$ inches camber, but are not gathered; that is, they are parallel in plan view. Whenever a car comes into the factory or any of our branches for repair work of any kind, whether this refers to wheels and tires or not, we always check up the wheel alignment, and parallelism.—Locomobile Co. of America.

Marion

Jackson, Mich.—All front axles of Marion cars are constructed, and tie rods adjusted to provide from 5/16 inch to $\frac{3}{8}$ inch toe-in of the front wheels. A measurement taken between the tires to the rear of the front axle and on a horizontal line with the wheel spindle would exceed by 5/16 or $\frac{3}{8}$ inch a measurement taken diametrically opposite to this point.

Rear axles in all cases are set at right angles to the center line of the frame, as all frames are inspected for squareness and location of spring brackets.

The only remaining point to establish proper setting of both front and rear axles is the location of the bolts in the springs, which register in holes in the spring perches on the axle. All springs are inspected for the location of the bolts in question with relation to the front eyes of both front and rear springs.—Mutual Motors Co.

Marmon

Indianapolis, Ind.—If it is found that the front tires seem to be wearing off too rap-

idly, it is well to examine the wheels. If they are not properly trammed the tire is being subjected to a diagonal grind as it passes over the road. The distance between the right and left wheel rims in front of the axle should be $\frac{3}{8}$ -inch less than the corresponding distance behind the axle. This may be adjusted by removing the cross rod right end and screwing one or more turns in or out. The wheels as a whole should slope very slightly in from top to bottom. A severe bump or jolt may at any time strain these parts so as to throw them out of line.—Nordyke & Marmon Co.

Maxwell

Detroit, Mich.—In assembling the wheels in front axles on the Maxwell 25 the toe-in from front to rear is established at $\frac{3}{8}$ inch, corresponding to 3/16 inch on each wheel. The wheels are trammed so that the distance between tires in front is $\frac{3}{8}$ inch less than the corresponding distance at the rear, between points on level with the hub. This causes the wheels to hold the road better and makes steering easier. Greater toe-in than this causes excessive wear on front tires. The angle of the wheels from a vertical plane is such that the difference between the trammed dimension between the tires at the bottom and at the top is 15/16 inch.—Maxwell Motor Sales Corp.

Mitchell

Racine, Wis.—To make up for the tendency of the front wheels to spread under the driving force, the front wheels of the Mitchell six are toe-in $\frac{3}{8}$ inch; that is, the distance between the two front wheels if measured ahead of the front axle, is $\frac{3}{8}$ inch less than if measured back of the axle—making the measurement in each case at a point 90 degrees from the point of contact of the wheel and ground. To obtain this alignment adjust the tie rod.

The steering knuckles are so constructed that the distance between the tops of the front wheels is 1 $\frac{1}{4}$ inches greater than the distance between the wheels at the point of contact with the ground. This rakes the steering knuckles to such an angle as to bring the wheel contact with the ground nearly in line with the axis of the knuckle bearing, thus reducing the steering effort to a minimum.—Mitchell-Lewis Motor Co.

Moon

St. Louis, Mo.—Moon cars are built with the front wheels toeing in very slightly. The wheels will measure about 5/16 inch narrower in front, measuring on a line horizontal with the spindle.

It is customary to set the spindle so the wheels have a swing, that is, they measure closer on the ground than they do on top. This swing is varied by the different manufacturers, but a fair average is 1 $\frac{1}{2}$ per cent swing.—Moon Motor Car Co.



The effect of misalignment of wheels on tires

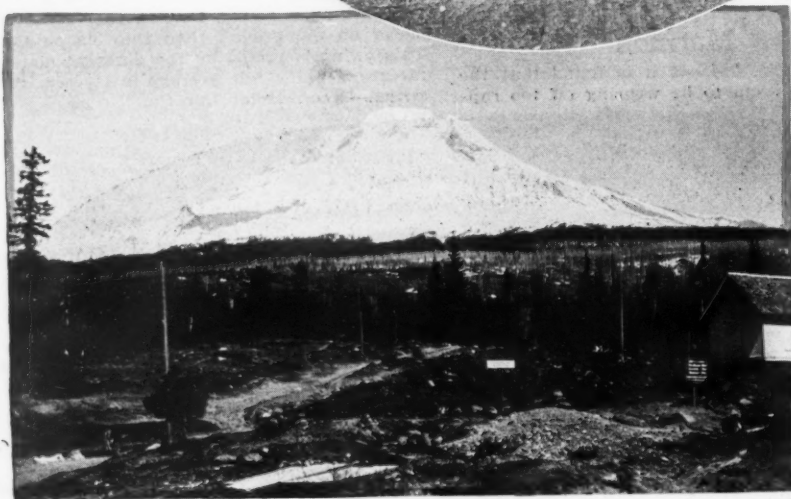


The barren wastes of the Tygh valley. This is a veritable desert, though not a plain



Left — Wahkeena Falls, named by the Indians and meaning "most beautiful"

Tunnel through Mitchell's Point, on the Columbia River highway. Note windows cut from solid rock



This gives one a good idea of some of the rugged country passed through on the Columbia River highway. This view was taken at the Government camp and shows Mount Hood in the distance



Mist falls, one of many of this kind to be seen on the journey around Mount Hood

Circling Mount Hood in a Motor Car

One May Experience Both Frigid and Tropical Belts

"WANT your fortune told, lady?"

"I should say not. I think we have fortune enough right here."

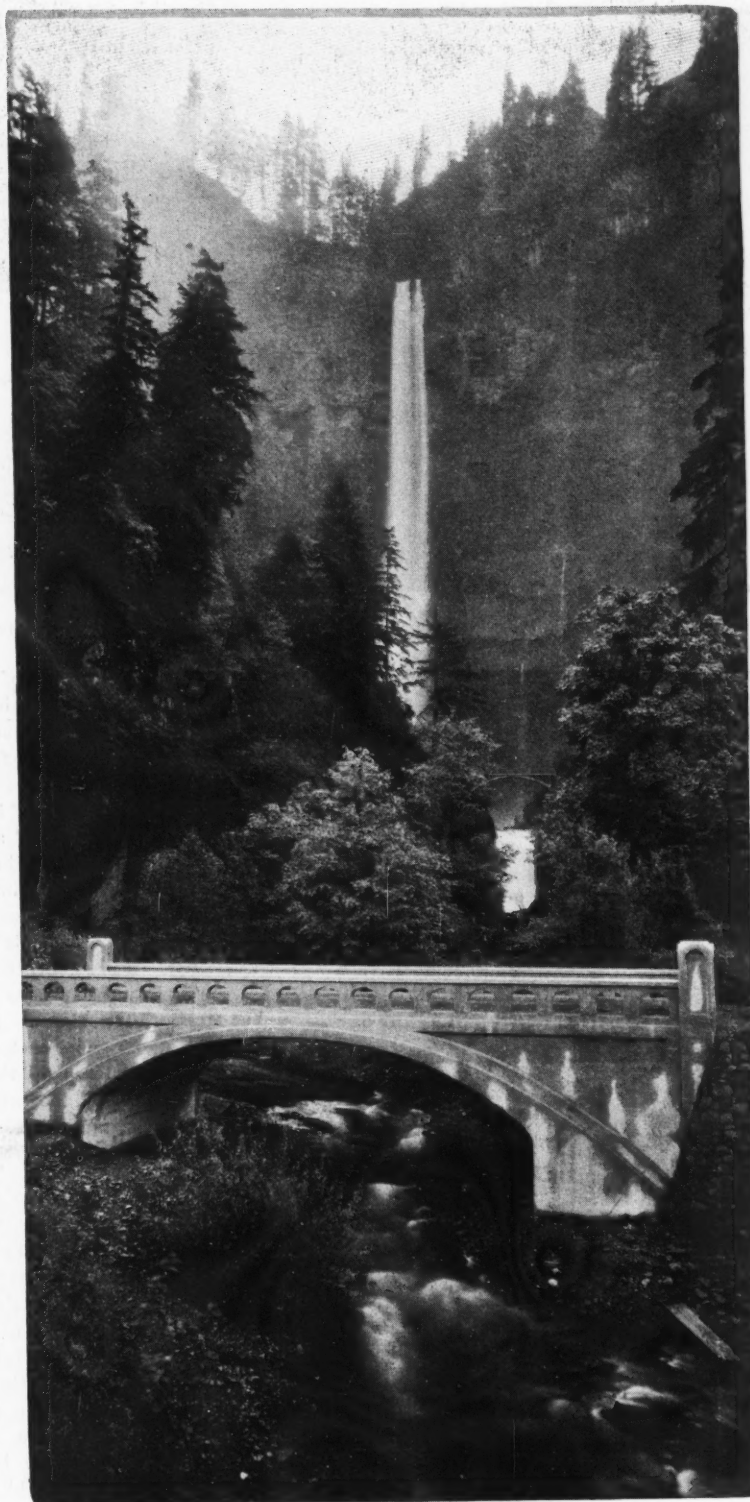
On the brink of a deep, bald canyon in Central Oregon the question was asked by the queen of a gypsy train of eight wagons. For an hour the gypsies had been trying to pass a big motor truck loaded heavily with furniture. The grade was narrow and a slip would have meant a pitch into the bottomless recesses of the canyon and perhaps death.

Four wheels had been changed on the gypsy wagons but still there wasn't room to pass the big truck on the curve. The men of the gypsy band were dirty and looked mean enough to kill a fellow for 50 cents. They were moving their circuit outfit from California to Pendleton, Ore., the Round-Up city of the world, where the cowboy and "let 'er buck" tactics reign supreme, and it was easy to discern that the dark-skinned men were angered by the delay caused by the meeting with the white man and his truck. Their oaths and their surly glances gave testimony of their wrath.

Such was the situation when the queen gypsy deliberately asked the wife of the truck driver, who guarded the load of furniture, if she wanted her fortune told. The question and answer came at the tensest moment of the tangle.

The horses were unhitched from the leading gypsy wagon after the frightened animals had carried one of the wheels within a bare inch of the precipice. The

men jacked up the wheels and threw them back on the grade inches at a time. Then all literally put their shoulders to the wheel and the wagon was half-carried, half-pushed around the treacherous brink. In this manner each of the gypsy wagons passed on up Tygh Valley, Oregon.



Double Multnomah Falls, along Columbia River highway

By Chester A. Moores

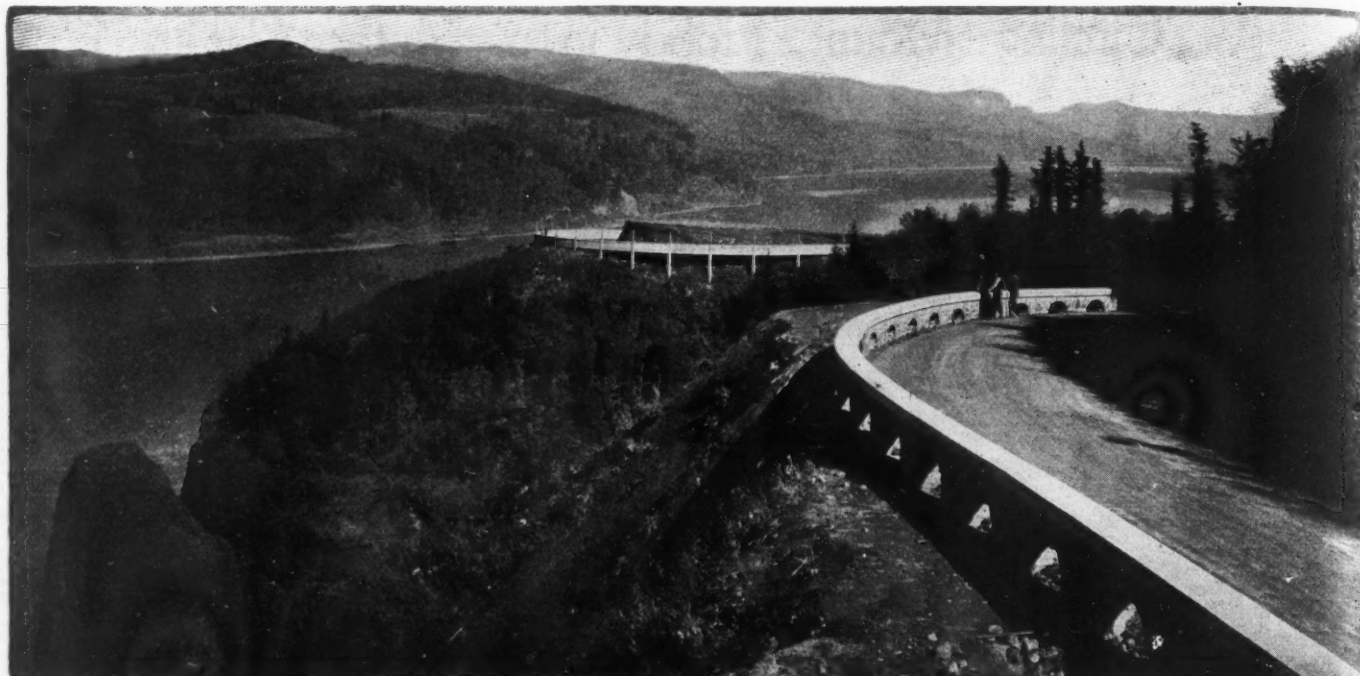
Grandeurs of This Trail Said to Surpass Any Other Known

The incident was but one of the many witnessed by a party of Portland motorists—Henry Wagner, Sr., Henry Wagner, Jr., E. J. Clark and the writer—who had left the City of Roses early that same morning in Mr. Wagner's big Packard, to find a path around Mount Hood, Oregon's sacred mountain peak. When they reached Portland that evening, under the light of the same day's sun. Mount Hood had been circled completely by motor car for the first time in history.

And, what is more, the wonders of perhaps the greatest scenic loop trip in all the world had been uncovered for all time. The new loop includes a drive over the full length of the Columbia River highway from Portland to Hood river, a panorama of the world-famous Hood river valley flanked by three snow-tipped sentinels—Mount Hood, Mount Adams and Mount Jefferson—a face-to-face visit with the sun-kissed wheat fields that spread out from The Dalles, a taste of real desert in the Tygh valley and several hours' intimate acquaintance with a majestic mountain that towers up 11,000 feet above a mighty chain of hills.

Oregon claims that a consecutive tour embracing this wide variety of scenery and atmosphere amounts to the trip de luxe of America. It challenges the world to produce a continuous drive that will match the loop around Mount Hood for this is truly a revelation of nature's handiwork.

New York may have its drive along the Hudson river, just as Southern Italy has



Crown Point, which is 700 feet above the Columbia river on the highway bearing the same name as the stream

its Amalfi drive and Germany its boulevard along the Rhine, but Oregonians will not grant that any highway in the world excels the paved boulevard that winds through the gorge of the Columbia river and thousands of easterners who last year drove over the new highway have, by their superlative words of praise, entrenched that pride in Oregon hearts so deeply that it will never be surrendered.

The fruit groves of California and Florida, of Hawaii and the tropics, may surpass the beauty of the Hood River valley, the home of the standard apple, but the picturesque sweep offered the eye of the traveler who ascends the hills above the Hood river orchards is competition for any landscape.

The wheat fields on the plains of Russia and Canada may overshadow those of the rolling hills near The Dalles, where there is nothing but wheat as far as the eye can reach in every direction.

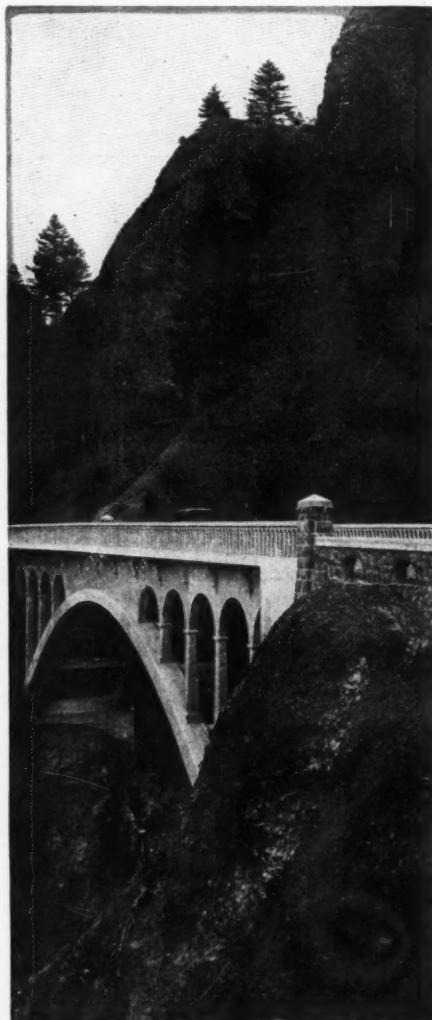
Tygh valley may not rival the deserts of Arizona nor the Grand Canyon of Colorado, but it is bleak enough to hypnotize the tenderfoot.

2 Miles Above the Sea

Perhaps Mount Hood is not as mighty as India's peaks and Japan's sacred mountain, but it stretches nearly 2 miles above sea level, high enough to make it lord of all Oregon.

Even granting that the Columbia River highway, the Hood river valley, the wheat fields near The Dalles, the desert of Tygh Valley, and the mountainous country about Mount Hood are not superior in their respective fields, where on earth, except in Oregon, is there a drive that embraces all of these elements?

At the present time the Columbia River highway is paved for a distance of 41



Crossing Shepperd's Dell on the Columbia River highway. This is one of many such beautiful bridges to be found on this drive

miles east of Portland, Oregon's metropolis, from which the highway is approached by three paved roads that lead through a picturesque farming country for about 22 miles.

Then the highway begins boldly on a precipice of solid rock 725 feet above the waters of the Columbia River. As if to form the rim of a giant's headgear the road here describes a circle of 250 degrees and descends on a grade, never more than 5 per cent, to the cool precincts of a virgin forest where the highway parallels itself five times. From the crest of this hill, Crown Point, the traveler, on a clear day, can see up the river's gorge for 35 miles and a like distance down toward the salt waters of the Pacific.

Twenty-two Waterfalls

Along the shores of the next 25 miles of highway are 22 beautiful waterfalls, each fashioned by nature to suit its own particular setting. First Latourell Falls slip gracefully over the tall cliff of basalt as currents of wind from the gorge scatter its threads into spray. Then comes Shepperds Dell, then Bridal Veil Falls and Mist Falls, where a great volume of water is driven into near-nothingness before it reaches the bottom of a cliff, 1,500 feet below. Wahkeena, the Indian word meaning "most beautiful," is the name that has been given the foaming cataract that springs from Punchbowl Crater in Benson Park.

The lord of all the waterfalls is Multnomah, named after an old Indian chief. Here the roaring water takes two leaps to make a drop of 700 feet. A quaint trail starting below the falls leads to Larch Mountain, the grandstand of Mount Hood, which affords a panorama dotted by

the towering heights of eight snow-capped peaks, an imposing view of mountain scenery.

At Oneonta Gorge the engineers have tunneled a great mountain of rock that separates Oneonta cleft and waterfall from Horsetail Falls, which many believe the most hypnotic spot along the highway. A total of eleven waterfalls have bordered the last 10 miles of roadway.

Then the traveler winds in and out over bridges and viaducts that lace the sides of hills running skyward to pinnacles 1,500 feet high. McCord Bridge is 60 feet high and 360 feet long, while some of the three-arched bridges form a span 80 feet in length.

On either side of the paved boulevard the luxuriant growth of fir trees, of ferns and salal, are wondrous in their varying composition of light and shadow. Experts in natural color photography declare this highway is the most prolific field in the country because of the complete transformations effected between morning and nightfall.

Perhaps the engineering masterpiece of the highway is at Mitchell's Point, where a tunnel has been chiseled through a tall rock. Mitchell's Point has five windows facing the river, thus excelling the world-famous Axenstrasse along the shore of Lake Luzerne, Switzerland, where three windows have been carved out of rock.

Not far this side of Mitchell's Point a view very much resembles the Lake Louise effect in the Canadian Rockies. One can readily imagine that several lakes are tucked away in the mountains, but, in fact, it is only the Columbia river, most of which then is shut from view.

Two Eulogies

After driving from Portland over the Columbia River highway nearly to Hood river last summer, General George W. Goethals, builder of the Panama Canal, said:

"The Columbia River highway is a tremendous engineering accomplishment, and it is the most wonderful scenic boulevard in America."

Chief Forester Graves declared: "The scenery of the Columbia River highway is unsurpassed."

But on the 235-mile loop trip around Mount Hood this wonderful roadway is but a chapter. Hood River valley, the wheat country about The Dalles, the deserts of Central Oregon, and the frigid zone on the south side of Mount Hood are yet to come.

When one reaches the apex of the long hill that overlooks the charming Hood River valley, he feels as if he were knocking at the back door of Mount Hood. The landscape is superb.

Not long after this vision of fruit and greenland is left in the background the verdure of the hills begins to fade away gradually into the typical bleakness of the Central Oregon country. Lava rock on

the hillside is an evidence of this transition, and then, as he nears The Dalles, the motorist gets his first real whiff of sage brush.

The change from the cold shores of the Columbia river to the endless wheat fields beyond The Dalles, where the sun beats down as if it were trying to set fire to the earth, is so complete that often the person who nearly froze while driving along the highway suffers sunburn through his clothes as he exposes his back to the central Oregon sun.

As he enters the mysterious Tygh valley he can almost believe he is in Arizona. The road is narrow in this country and woe unto the man who allows a wheel to get even a whisper over the ridge. The depths of these canyons are almost fathomless.

Before reaching Government camp, the outpost at the southern base of Mount Hood, the tourist must travel for some 35 miles over the old Barlow trail which was

the route followed by the Oregon pioneers of the forties and fifties who had driven their ox teams across the plains from the East and the Middle states. This road is still a narrow path through pine groves and it still possesses every enchantment of the mountains.

After skirting the rim of the snow-peak for many miles the road finally descends Laurel hill and then spans an endless chain of creeks, all filled to overflowing with mountain trout. Thousands of rhododendron bushes flank the shores of the road and make of the country surrounding the entrancing brooks a fairyland of floral splendor.

As the motorist completes the last leg of the loop he has time to ponder over the wonders of a 12- or 14-hour trip that embraces every conceivable variety of scenery, every character of road and every brand of atmosphere met on a transcontinental tour.

It is indeed the trip de luxe of America.

Answers to Inquiries for Road Data

Kansas City West

MIAMI, Okla.—Editor Motor Age—We are contemplating taking a trip through the West this coming summer and would like to have you furnish us with a tourist guide beginning at Kansas City, Mo., and going west over the mountains.—Coleman Harvey Buggy Co.

For your trip through the West from Kansas City, Mo., going over the mountains, we advise your procuring Volume 5 of the Blue Book. The 1916 edition has just appeared and is full of new material for the West, especially through Colorado and the National parks.

From Kansas City west there are a number of routes which you can take. There is a southern route via the Grand Canyon to Los Angeles, a central route through Colorado, going through Pueblo and Denver, then over to Grand Junction, or direct from Pueblo to Grand Junction and out through Salt Lake City, and then to San Francisco. Or, you can go from Kansas City up to Yellowstone Park either through Colorado and Utah or by going up to Cheyenne and come into the park from the east.

We would advise your procuring Volume 5 of the Blue Book, looking it through, and then after you have formed a general opinion as to what towns you wish to go through, communicate with the Blue Book publishers as to the best routes to take for the parts of the country you wish to see. Its touring bureau will be glad to map out any routes you may desire. Address Blue Book Publishing Co., Mallery building, Chicago.

Davenport, Ia.-Watkins, N. Y.

Brooklyn, Ia.—Editor Motor Age—Kindly publish a route from Davenport, Ia., to Watkins, N. Y., giving the distance. I intend making this trip from Brooklyn to Watkins, but do not need a route from Davenport.

2—What volume of the Automobile Blue Book will give detailed information of this route.—W. W. Koons.

In going from Davenport, Ia., to Watkins, N. Y., we advise you to come up to Sterling, then go through Dixon, Rochelle, De Kalb, to Geneva. From here you can go into Chicago, then go down to Hobart and Valparaiso, or you can go from Geneva to Aurora, then to Joliet and over to Thayer, and then into Valparaiso.

From Valparaiso, the best route is to go through South Bend, Goshen, and Ligonier, Bryan, Wauseon, Toledo, Fremont, Clyde, Bellevue, Norwalk, Elyria, Cleveland, Painesville, Conneaut, Erie, Westfield, Mayville, Jamestown, Salamanca, Olean, Wellsville, Hornell, into Watkins.

The distance for this trip is about 840 miles. Volumes 4 and 1 of the Blue Book will give you complete routing for your trip.

Sterling, Colo.-Detroit, Mich.

Sterling, Colo.—Editor Motor Age—About the middle of June I want to attend the American Medical Association meeting in Detroit and want to drive a car home. I wish to go from Detroit either to Dayton, O., or Anderson, Ind., whichever is better, then from Indianapolis, Ind., to Charleston, Ill., then through Springfield, Peoria and Rock Island, crossing the Mississippi, to Des Moines, and Omaha.

I am not particular about the route north from Charleston, Ill., but want to make Des Moines. Please outline the best route.—Dr. J. H. Bush.

In going from Detroit to Indianapolis, your best routing is to go through Ypsilanti, Saline, Clinton, Adrian, Seward, Wauseon, Archbold, Bryan, Ft. Wayne, Huntington, Marion, Alexandria, Anderson, Pendleton, then into Indianapolis. From Indianapolis to Charleston, you go through Danville, Rockville, and Paris. From Paris to Des Moines, the routing that you outline is about as good as there is, going through Mattoon, Shelbyville, Taylorville, Springfield, New Holland, Peoria, Galesburg, Rock Island, Davenport, Iowa City, Marengo, Grinnell, Newton, Colfax, and Des Moines.

You might find a slightly better road, due to local conditions of that time of the year, if from Shelbyville, you went up to Decatur and Bloomington, then over to Peoria. This is something that you could not foresee until the last minute, depending upon the rain, weather, etc. For this trip that you have outlined we advise your procuring Volume 4 of the Blue Book, which will give you complete route data from Detroit down through Indiana and Illinois and back up to Rock Island. Volume 5 will give you the routing from Davenport to Des Moines and out to Sterling.



The Readers' Clearing House



ASKS ABOUT HIGH SPEED MOTOR Does Not Understand Absence of Vibration at 3,400 R. P. M.

OND DU LAC, Wis.—Editor Motor Age—In the March 2, 1916, issue a power chart of the Chalmers 6-30 was published, which chart, if I understand correctly, shows a maximum horsepower of about 46, and the peak of the power curve at 2,300 r. p. m. This motor is strongly advertised as a 3,400 r. p. m. motor. Kindly explain the advantages of this additional 1,100 r. p. m.

2—It would seem that if a motor attained the height of its efficiency at 2,300 r. p. m., vibration would be so great at the higher speeds as to be harmful to bearings, etc. Is it not true that vibration at 3,400 r. p. m. is the reason why this motor cannot attain a greater speed?

3—Would there be any advantage in advertising this motor as a 30-horsepower motor if it developed 46?—F. G. Kilp.

1—While the maximum power is attained at a crankshaft speed of about 2,300 r. p. m., the fact that the motor in question is capable of 1,000 r. p. m. greater speed is assurance that it is not being strained at any time, even though 2,300 r. p. m. is quite a high rotative speed in itself. That is, when you know that the engine can attain a speed of 3,400 r. p. m. without hurting itself, it is very evident that it is under no effort at all at moderate speeds. The possible excess speed might be regarded as a sort of factor of safety.

2—This is just why Chalmers says the motor will attain 3,400 r. p. m., because the engine will attain that speed without excessive or harmful vibration. Various mechanical limitations determine the highest possible speed of any engine, whether it be 3,400 r. p. m. or 1,400 r. p. m.

3—None except conservatism.

MERITS OF DIFFERENT LUBRICANTS Castor Oil Has High Viscosity at All Temperatures and Lubricates Well

Anaheim, Cal.—Editor Motor Age—What can Motor Age say as to the merits of castor oil for lubrication of the motor?

2—Do the racing drivers use pure castor oil or a mixed oil, and which gives best results?

3—Where can the grade used by the racing drivers be obtained?

4—If one when using castor oil failed to carry an emergency supply would any of the common mineral oils mix with the remaining castor in the crankcase without causing some sort of trouble?

5—How is the single row annular ball bearing which is mounted in the end of the crankshaft of the 22-72 Mercer engine lubricated? It is in behind the clutch in a most inaccessible place, it looks like it goes without. As it is not in action much of the time it strikes me that it could run dry quite easily.

6—How is the double row on the other end of the clutch shaft lubricated? Also the throwout bearing?

7—In your description of the 22-72 engine, Motor Age states that there are only two rings on the pistons, but the plate of the sectional engine seems to show three rings. Which is right?

8—What current is drawn from the battery when breaking loose the motor of the 1916 Mercer 22-72 at about 50 degrees with the grade of oil recommended by the factory in the crankcase? Amperage necessary to continue turning? Cranking speed?—R. E. Huff.

1—It has very high viscosity at all temperatures and will lubricate when the engine gets hotter than normal.

2—Some use pure castor and some use a mixture of mineral and castor oils.

3—White & Bagley Co., Worcester, Mass., and Castrol Lubricants Co., Chicago.

4—Yes.

5—The spigot bearing which supports the front end of the clutch shaft in the crankshaft is packed with grease when being assembled in the factory. It needs no attention whatever, as a light brass shield closes up the open face so that no grease can escape.

6—The double row bearing on the rear end of the clutch shaft can be lubricated through an oiler on top, but is also packed with grease when it leaves the factory. The throwout bearing is an oil-tight con-

Repairmen's Department

BENTON HARBOR, Mich.—Editor Motor Age—I would like to suggest that Motor Age open a department where the motor specialist and repairman can discuss the different phases of motor car construction and suggest changes and improvements such as they find in their everyday life in the up-keep and repair of different cars where we might discuss the present and future type of car and motor. Let us have something of the present day motor and its adaptability to the heavy low-grade gas which we are forced to use. I believe that if Motor Age starts something such as I suggest we will find some very interesting reading in it, as after all is said and done it is directly up to the repairmen of the country whether the motor car continues to operate and you will find that in the course of this work that they run on to many things which the engineer would do well to follow. Please publish this and see if there is not some live repairmen Motor Age will hear from that would be very glad to enter such a discussion.—A Reader.

Motor Age trusts that the suggestion of A Reader will be acted upon by the repairmen and that there will be a sufficient number to warrant their incorporation in a special department. At the present time the columns of the Reader's Clearing House department are open to such discussions and Motor Age will welcome them.

struction with bevel felt washers to close it up tight, and is packed at the factory with a special grease to withstand high temperatures and needs no attention.

7—Three rings are used on the pistons.

8—On actual tests, according to the Mercer people, it takes 350-ampere for a fraction of a second to break the motor loose when cold. This drops immediately to 150-ampere which is the amperage for continuous rotation. The cranking speed varies from 180 to 200 r.p.m. actual rating.

Changing Carburetor on Buick

Harriman, Tenn.—Editor Motor Age—The first model D 45 Buick cars put out last fall were equipped with model D Marvel carburetors and 32 by 4 tires, while later cars are fitted

with model E Marvel carburetors and 34 by 4 tires.

1—Why was the change made in carburetors and which of the two is the better?

2—When size of tires were changed was the gear ratio changed also? If so, to what?—Own Driver.

1—We do not know why the change was made. Possibly the factory can enlighten you. We would say, however, that the change was done to make the car a better car, just as any change is intended as an improvement.

2—The gear ratio was not changed to our knowledge.

WANTS DATA ON NEW KIND OF FUEL

Reader Is Interested in Substitute for Gasoline—Not Recommended

Beaver Falls, Pa.—Editor Motor Age—An article appeared in the Pittsburgh Chronicle-Telegraph on March 31, in which a man claims to have solved the gasoline problem. The article reads in part as follows:

"He mixes kerosene, camphor and gasoline. Only 17 cents per gallon, while gasoline is selling here at 27 cents. Branner uses the following combination: Gasoline, 5 gallons; kerosene, 3 gallons, and a small quantity of camphor gum."

What does Motor Age think of this mixture, and will it do any damage to the engine? If this mixture would prove satisfactory, how much camphor gum would Motor Age recommend using? Also, how would it affect the motor as to starting?—Walter S. Mayer.

1—We are inclined to think that this mixture would not be satisfactory. By mixing kerosene and gasoline you are lowering the vaporizing possibilities of the fuel, and making it harder for the carburetor, designed primarily for gasoline, properly to handle the heavy fuel. We would not like to pass upon any combination without thorough trial, but on the face of it, this mixture does not look very pleasing. Undoubtedly it would make starting more difficult, would tend to greater carbonization and possibly have a tendency to overheat the engine.

The Edison Battery

Bike Ia.—Editor Motor Age—Is the Edison nickel-steel battery used by any manufacturers?

2—What is the formula for finding S. A. E. horsepower?

3—What is meant by open and closed ports?

4—Is the Zenith carburetor a success? If it is non-adjustable, how does it adapt itself to varying climatic conditions?—Leopold H. Schultz.

1—Yes; a number of electric car manufacturers fit Edison batteries.

D²N

2—H.P. = $\frac{D^2 N}{2.5}$, at a piston speed of

1,000 feet per minute, where D is the bore of the cylinder in inches and N is the number of cylinders.

3—Open ports when valves are open; closed ports when valves are closed.

4—Yes. By automatic variation of the proportions of gasoline and air.

Fuel Adulterants

German Valley, Ill.—Editor Motor Age—Kindly state the effect of ether, also of camphor and gasolette upon a four-cylinder motor. Does ether remove carbon deposits? Does any one of the above chemicals increase power and lessen consumption of gasoline? Also

please state if any of them harm a motor, and if so how is the injury caused? Also state what would be the proper proportion of each to use per gallon of gasoline. I mean to use them separately, not as a mixture of all three.—P. M. M.

Either simply causes easier starting because it vaporizes more quickly than gasoline. It will not remove carbon. To use enough to give an appreciable increase in power would make much too expensive a fuel.

The above is true for camphor also.

Motor Age has not tested the proprietary fuel mentioned.

POLISHING THE BODY OF THE CAR

Waxes Are Good, But One Should Use No Acid or Alkali

Elwood, Ia.—Editor Motor Age—Does a preparation, such as Johnson's prepared wax, injure the finish of a car body? Does it preserve the finish longer than if not used?

2—Which is considered better, wax or a polish?

3—If the body is waxed, would it injure it to brush the dust off or should it be washed off?

4—Which type of rear axle is the stronger, the floating or the semi-floating?

5—What horsepower does the Paige 6-46 develop at 1,000 r. p. m.? What does the Chandler develop at 1,000 r. p. m.?

6—Publish a power curve of the Chandler.—R. Wirth.

1—It is the purpose of all preparations of this nature, whether they be waxes or polishes, to first protect the surface of the body—the finish—from the action of water, rain, dirt, and even to some extent the action of the sun's rays. Consequently, to provide a smooth, shiny coating, all of such polishes, providing they do not contain alkali or acids, do preserve the finish and make a finish last longer than if they were not used.

2—As to whether waxes or polishes are better is a matter of opinion.

3—If the body is waxed it does not injure it to dust off with a soft cloth or cotton duster. Mud which has dried upon the body should be washed off.

4—This depends somewhat upon the construction than whether it is floating or semi-floating.

5—The Chandler motor develops approximately 35 horsepower at 1,200 r.p.m., which is equivalent to 1,000 feet piston speed. The power developed by the model 6-46 Paige is shown in the table below:

500 r. p. m.	16 horsepower
1,000 r. p. m.	31 horsepower
1,200 r. p. m.	36 horsepower
1,400 r. p. m.	41 horsepower
1,500 r. p. m.	43 horsepower
1,750 r. p. m.	45 horsepower
1,900 r. p. m.	50 horsepower

New Orleans, La.—Editor Motor Age—My car is equipped with 34x4-inch tires. Three are new, one is about worn out. Would it injure the car either in appearance or otherwise if I should replace the old tire with a 36x4½-inch and then as the 34x4-inch tires wear out replace them with the oversize tires?—G. J. R.

You cannot use 36 by 4½ tires to replace 34 by 4 tires without getting new wheels or, at least, new rims. The proper oversize for 34 by 4 tires is 35 by 4½. These can be used on 34 by 4 rims without changing the rims. It is better to replace first both rear tires and carry the old 34 by 4's as spares for the front. When these are gone you can put the oversize tires on the front also. To use only one oversize will make the car steer

badly if on the front, and too much differential action if on the rear.

Valve Lifts and Cams

Hutchinson, Kan.—Editor Motor Age—With valve ports 1½-inch in the clear and ¾-inch valve stems, what would be the correct valve lift in order to accommodate the maximum of gas passing through the valve port, especially for high-speed work?

2—Give a diagram of the cams operating the intake and exhaust valves, showing the contour of the cams, in the Wisconsin motor model A used in the Stutz cars. State whether or not the contour of these cams is conducive to maximum quietness.—E. L. Kerfott.

1—The lift should be .40 inch for flat valves; .42 for 30-degree valves and .57 for 45-degree valves.

2—Motor Age cannot give the contour of the Wisconsin cams. However, Fig. 1 gives good contours for either flat or roller cams.

More Details Needed.

Indianapolis, Ind.—I have a new motor and in running it sings. I do not know if that explains it or not, but it sounds like one often

Race Driver Objects

INDIANAPOLIS, IND.—Editor Motor Age—I note in Motor Age issue of April 13 an article on the Editorial Perspectives page with reference to "The Future Racing."

The author of this article undoubtedly has no conception of the inner workings of the race driver's and race mechanic's everyday life. It is indeed very unfortunate that speedways have seen fit to reduce their prizes, but in so doing the mileage has been reduced accordingly, also the high prestige motor car racing has always entertained in the eyes of the general public.

No doubt if the author of this article would join a racing team for 30 days during the coming season and put in the long hours of labor and hazardous efforts necessary to pay expenses in maintaining such a team and crew, also add the possibilities of a permanent injury or possible fatality, and after the 30 days the books have been balanced and his share of the prize money received, he no doubt would take account of himself and get back on the job with an entirely different viewpoint and the theme of his next story would have a different aspect.

—Eddie Rickenbacher.

hears an electric car go at times. Is this a natural condition, or can it be stopped without waiting for the core to wear in?—Interested Reader.

It is impossible to say from your description of the difficulty. Can you give us more details?

No Substitute for Air

Marshall, Ind.—Editor Motor Age—What does Motor Age think of wheels built so that

the wheel will absorb the shock instead of an air-inflated tire? Also, what has been the weak points to overcome in the construction of such wheels?

2—If such a wheel was made, tried, and worked successfully, would there be any market for it?—Wayne Foster.

1 and 2—So far nothing has been found which will absorb road shocks as well as air in a rubber tire.

Until some substitute or mechanical construction is found which will absorb a shock throughout the entire circumference of the wheel—as air does—air will continue to be the chief means, and pneumatic tires will be the most used.

FINDS MYSTERIOUS RUST IN WINTER

Something Probably Cut the Oil Film

—Another Reason Given

Portland, N. D.—Editor Motor Age—Last fall I put my car away in a tight shed, and upon looking it over have found that the engine and some of the metal parts have a heavy frost standing out, and two or three screws on the Delco starter were starting to rust. I cleaned them thoroughly and left them covered with a light film of oil. What is the cause of this? The garage has never been heated.—O. K. Priest.

Something cut the oil film. Possibly you neglected to turn off or drain your fuel tank and the evaporation of gasoline from the carburetor not only cut the oil but caused the rust also.

Using Bosch Six on Four

Toledo, O.—Editor Motor Age—Can a Bosch D 6 magneto be changed in any way so that it can be used on a four-cylinder car? If so, how and what changes are there to be made?—E. Nickelson.

1—It might be used if you fitted a four-cylinder distributor and timer instead of the six-cylinder one. Better consult the Bosch company first, however, before making any such change.

Driving with Battery Disconnected

Adair, Ia.—Editor Motor Age—I noticed in one of the recent issues that Motor Age said it knew of no car that could be driven with the battery disconnected from the generator without doing it harm.

I have a 1914 model White; cannot that? You would oblige me very much by letting me know.—Boyd Hubbard.

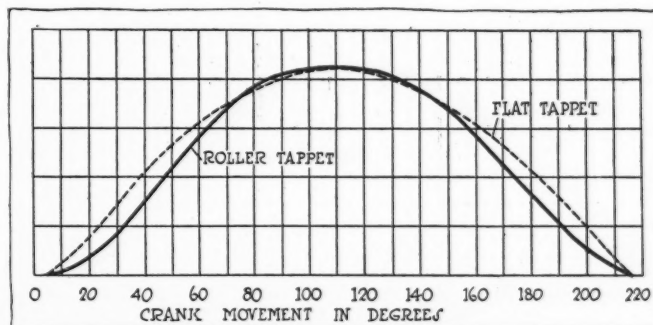
No car should be run with the battery disconnected from the generator. This includes the White.

Leaks Oil Around Pushrods

Kewanee, Ill.—Editor Motor Age—My model 29 Buick splashes oil from the opening at the lower end of the pushrods, where the rods go into the crankcase. The oil gets over the magneto, wires, plugs, etc. Kindly suggest a remedy.—J. G. Hoffman.

The bushings are probably worn, and undoubtedly this will be stopped by having new bushings fitted.

Comparative valve diagrams for roller and mushroom tappets. This gives a good idea of the usual cam contour of these two types





The Motor Car Repair Shop

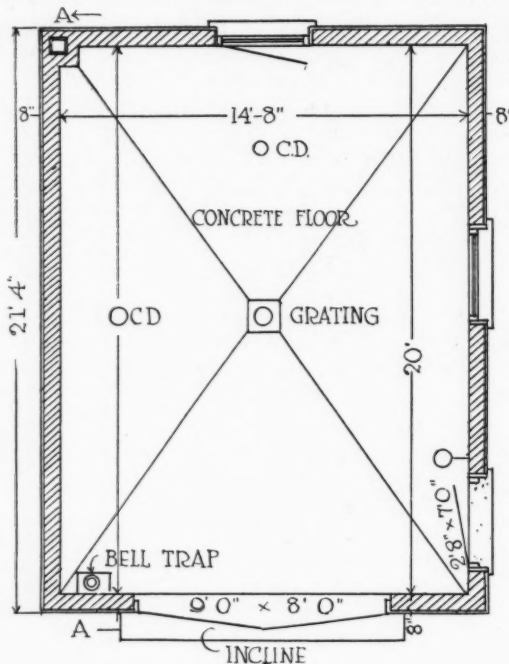


Building a House for the Car

Plans for a Permanent Structure for One Machine

THE problem of housing the motor car is sometimes a big thing to solve especially where the owner lives in some district or locality where there are no public garages or private house owners with such accommodations to rent. Where the car owner is obliged to erect his own car house, and permanency is not the first consideration, the portable types are perhaps best, and at the present time many very good ones may be purchased for prices ranging from below \$100 to well above that amount, depending upon the size and elaborateness of the structure. The metal garage is best adapted for city use, for reasons of fire protection, etc., but wooden types can be used very advantageously where there is plenty of open space, such as in certain suburban locations where they are far enough removed from other buildings to prevent any objections from the fire danger.

However, when a man owns his home, he usually feels that he wishes to erect some sort of permanent affair that will be suitable all the time, and that is more along the strictly building lines. Such a garage for one car is that shown in the detail drawings herewith. The building measures 14 feet 8 inches by 20 feet inside and this is considered large enough for a car and workbench, at the same time af-



Floor plan, showing drain

fording plenty of space to work around the machine unhampered by the walls.

The suggested plans call for a plaster exterior, but this could be changed to suit the desires of the owner. These particular plans were drawn for a garage that was actually built, and from what is given here, any builder could erect the affair without any extra information, except as to materials required. The cost would vary anywhere from \$500 upwards. The roof has been made artistically with overhang-

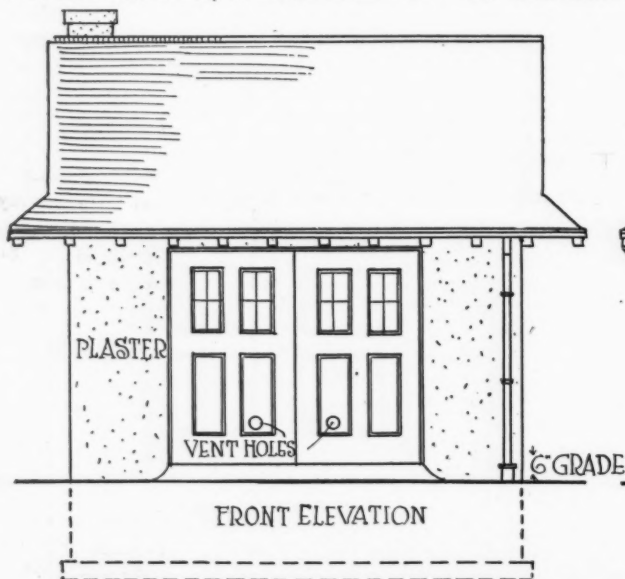
Fireproof Garage Large Enough to Work Around Vehicle

ing eaves and this conforms well with any modern home with the usual up-to-date roof.

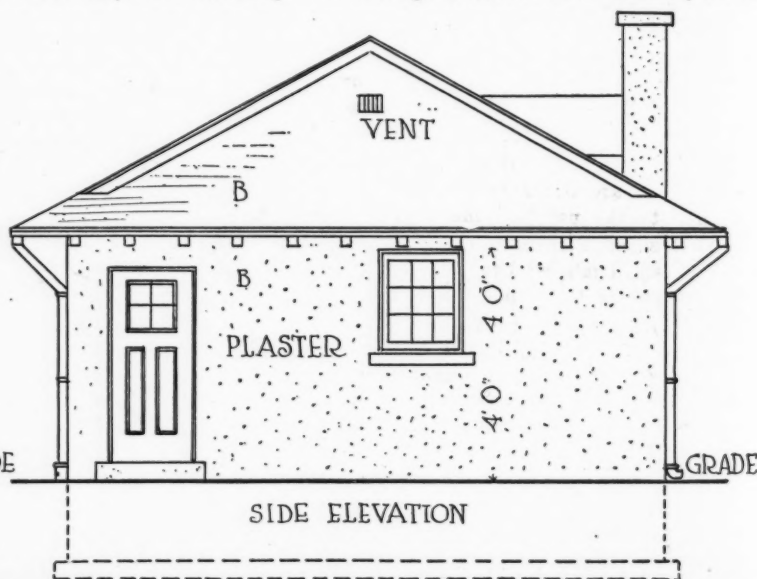
Concrete is used for the floor, with a bed of cinders 3 inches deep on top of which 3 inches of concrete are spread, then a finishing coating 1 inch in depth. The floor slopes to the center where there is a drain, making it possible to wash the car without any trouble. The foundation is laid 3½ feet into the ground, as the detail drawings show, and everything about the little car home is constructed with the idea of being substantial. A chimney is built into the corner, allowing for a stove to keep the garage heated in winter—not always a safe method—and there are windows on the sides as well as a door.

This could be built of brick or tiling just as well. The plans shown will simply form a basis for construction where a man is interested in erecting a permanent and highly desirable type of private garage with all conveniences. The dimensions have been fixed advisedly, for it is not believed that it would be advisable to build such a pleasing type of car house as this unless there were plenty of room for any sort of working around the machine that might be necessary.

Such a type as this would aid materially in cutting the cost of fire insurance, for it



FRONT ELEVATION



SIDE ELEVATION

Front and side elevations show the pleasing lines of this modern fireproof car home

is practically fireproof and is the type of construction that is adhered to in the most

modern of the present day buildings of all kinds, to say nothing of garages.

Voyage of the "Hannah Maria"

(Concluded from page 9)

swift. From Buffalo we proceeded via Niagara Falls, Batavia, and Caledonia, to Rochester; thence via Canandaigua, Geneva, Syracuse, Utica and Albany to Malden-on-Hudson; thence Kingston and Ferry, across the Hudson, down the east side highways into New York City. We passed through Buffalo Monday noon, September 13, arrived in Rochester the next forenoon, left Rochester Wednesday morning, September 15, reached Malden Thursday afternoon, September 16, left there Friday morning, September 24, and rolled our wheels down Broadway that afternoon, 542.6 miles from Buffalo.

The distance from our gateway in Pasadena to Madison Square in New York City, via the route we pursued, was 4,495.9 miles. It required 214 gallons of gasoline costing \$34.47, and 14½ gallons of oil costing \$9.13 to make the trip, and we averaged a shade over 21 miles per gallon of gas throughout the journey. From door to door we were 58 days en route. Of these we were on the road the whole or portions of 41 days. To be exact, our driving time was 296 hours.

Some Roadways Good

Both California and New York have very complete systems of state highways. Ohio has considerable hard roadway, and the Colorado road beds are nearly always of a stone formation, consequently the motorist knows that in the above-mentioned states there is hard bottom somewhere under his wheels, and that he can make progress, be the weather what it may; but all between lay the states that depend upon dirt for road beds, hundreds and hundreds of miles in length, and, when wet, apparently the same in depth. Over these stretches the weather clerk rules with his capacious watering pot. When it is empty you are filled with gratitude and spin along while the spinning is good; but when the watering pot is full and brimming over, your sensations are not exactly those of gratitude, and you skid along until you come to rest in some morass from which you are extracted by the lurking farmer, to the painful tune of whatever he thinks you can stand.

Time and again we have seen the guileless farmer fish luckless motorists from the treacherous mud holes that were epidemic in certain well-known sections of the Kansas and Nebraska transcontinental highways at the time of our crossing, pretty much as a sportsman would whip his chain of favorite pools, and it is against human nature to expect these people willingly to give up such valuable income producing properties and pay to have them permanently paved in the bargain.

The scenic attractions of the trip are

contained in four very clearly defined zones, separated from each other by other zones of country, that range all the way from desert to flat farming country. The first is that section lying between the Golden Gate and Reno, Nev., and embraces the crossing of the Sierras. The second is that section lying between Salt Lake City and Price, Utah, on the Midland trail, and embraces the Soldier Summit crossing and the rugged beauty of Price canyon. The third is that section lying between Grand Junction, Colorado, and Colorado Springs, and embraces the Rocky Mountain crossing, and the fourth is the section of New York state containing the lakes, the Catskills, and the Hudson valley. Each of these four scenic sections possesses its own individuality, charm and atmosphere. It must not be understood that the sections of country lying between are without interest or beauty; but as a rule this beauty is limited to two dimensions—length and width.

The reader may be interested in the result of our efforts to insure our sight-seeing time by equipping the car before starting with new tires. He can judge for himself when I state that we rolled from Pasadena, via San Francisco, all the way to New York City, and our only tire trouble was one puncture, and never a blowout. To our minds it would be hard to find fault with such a record.

For the benefit of the fair motorist, the Little Woman's point of view should not be omitted from this narrative, and the point she considers of the first importance is that the children were just as much benefited by a vacation from us as we were from them. Leaving the tots behind was a kindness to all hands for anyone

who has taken kiddies on a long, continuous motor camping trip knows how little real pleasure they get out of such an experience. Making a new camp each day gives them no opportunity for romping, such as they find in a permanent camp. It was an easy matter to arrange in advance for news of their welfare.

She wishes further to state that, for a woman, such a trip requires courage, patience, and a willingness to consider and put up with anything and everything when occasion demands.

Our trip was productive of many unexpected sidelights. For example, we found it of great benefit and advantage to be able to look back at our own daily life from the viewpoint of a temporary outsider, as it were, and we made many plans for its alteration and improvement on our return home.

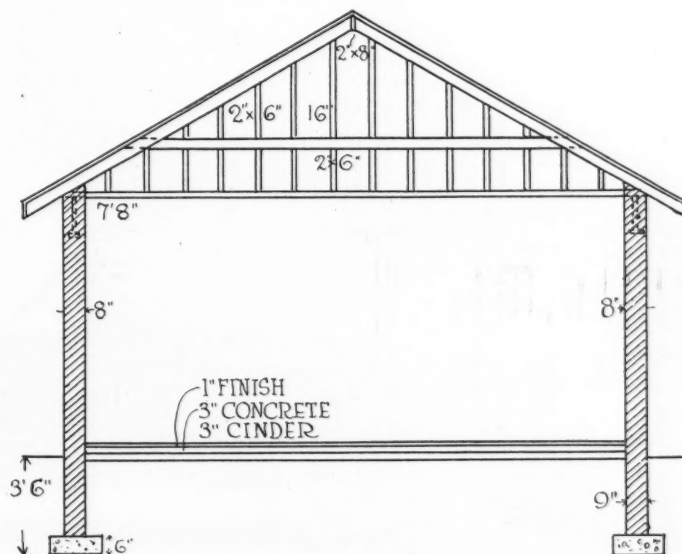
Recalls 1915 Weather

Practically every motorist east of the Rockies will remember, with mingled feelings, the brand of weather dealt out by the weather clerk during the summer and fall of 1915, and if it happened that he was camping, his feelings, as he listened to the efforts of the wind and rain to beat its way into his canvas shelter, and its sluicing efforts to extinguish the comfort of his camp fire, are best left unexpressed. Suffice it to say that these experiences have keenly whetted the edge of his sense of appreciation and ever afterwards his snug fireside, his home comforts, be they ever so simple, the very shingles on his roof, take on additional values and he realizes, as never before, what a lucky devil he is.

A cheerful disposition is a greater essential to the success of a motor-camping trip than the coffee pot, or even the frying pan, and we arrived home feeling that our entire trip had been a revelation and that we had had the most complete and sumptuously glorious time of our lives.

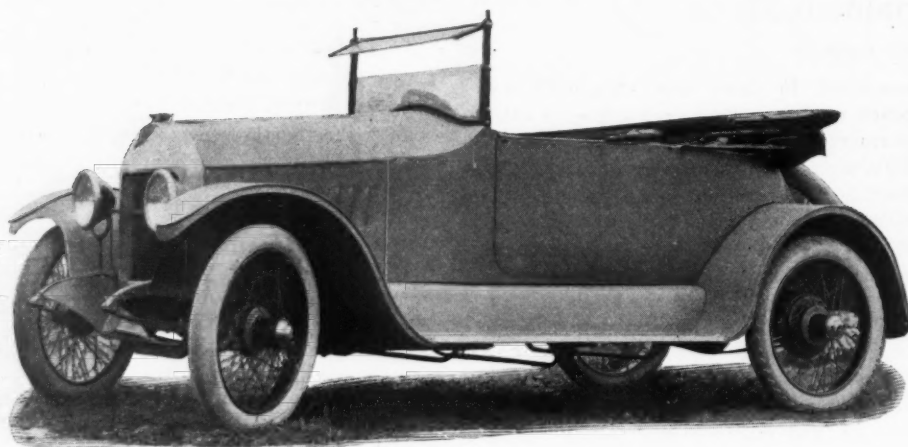
Our entire outlay for every purpose from

the day we left our door to the day we reached New York was \$220.79. Consider for a moment, living 58 days in the open, traveling in your own conveyance and being privileged to become intimately acquainted with the interests and resources of one's own broad country for such an outlay. How many are there of us who could have traveled a similar distance and done it for any less?

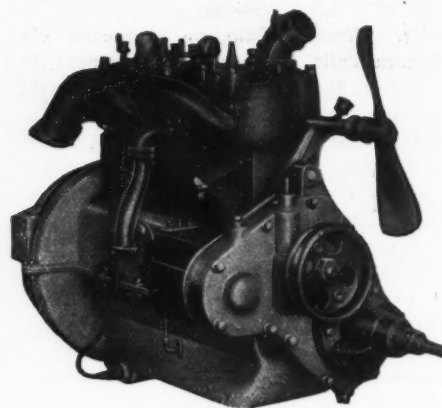


Cross section, showing floor construction, walls and roof!

Crow Announces Two Models in New 1917 Series



New Crow Cloverleaf roadster which sells at \$7.95



Right side of the Crow motor

Five-Passenger Touring and Three-Passenger Cloverleaf Roadster Body on Same Chassis—Prices \$725 and \$795

A NNOUCEMENT is made of the 1917 series of cars by the Crow Motor Car Co., Elkhart, Ind. There are two models, the five-passenger touring, with 112-inch wheelbase and the Cloverleaf, three-passenger roadster, built on the same chassis as the touring car.

The body of the touring car is large and roomy and is built along the conventional streamline. The Cloverleaf roadster body possesses very pleasing lines. The touring model lists at \$725, and the Cloverleaf roadster at \$795, both completely equipped.

Both cars are exceptionally large, though light in weight and the weight is well distributed, front and rear. There is said not to be 35 pounds difference between the front and rear weights of the car.

The motor is unique in several features and contains some special Crow engineering niceties. It has a detachable head, and piston-ring port holes for the conservation of oil and prevention of smoking. The motor is long stroke, four-cylinder type, block cast, with $3\frac{1}{2}$ -inch bore and 5-inch stroke. It develops 34.9 horsepower on brake test. Pistons are made removable through the bottom of the crankcase.

Cooling is by a large honey-comb radiator and an aeroplane type of fan is used. Ignition is Connecticut type. Lubrication consists of a constant level system, pressure feed to bearing. There is an oil indicator and also a filter. The carbureter is a Zenith float-feed type with hot air supply and adjustment. There is a choker to the carbureter on the instrument board.

The Crow Elkhart 30, both touring model and roadster, uses the design of dry-plate clutch, created by the Crow Elkhart Co. It is completely inclosed in a housing and consists of seven plates.

Rear Axle Gearset

The gearset is selective with three speeds forward and one reverse, and is placed on the rear axle. The Crow company has been utilizing this type for 8 years. The rear axle is floating and its drive members are easily removable.

A Dyneto two-unit system is used for starting and lighting. The frame is extra strong channel section pressed steel with a single drop, securely braced. Another one of the unique ideas in the Crow is a set of rods which extend under the car from running board to running board and

braces each of them.

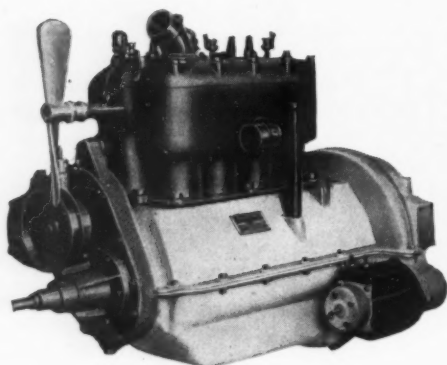
The body with its tapering hood and over radiator is made in the Crow factory and has several unique features for a body on a car at this price. It is built of white ash, sawed not bent, and covered with sheet metal, all braces being set into the wood at white heat. Felt padding between the wood and metal has done much to eliminate body squeaks.

The Crow company claims the thirty to be particularly economical in operation and maintenance—18 to 26 miles to a gallon of gasoline being possible, according to driving conditions and drivers, it is said. Tires are 32 by $3\frac{1}{2}$, front and rear.

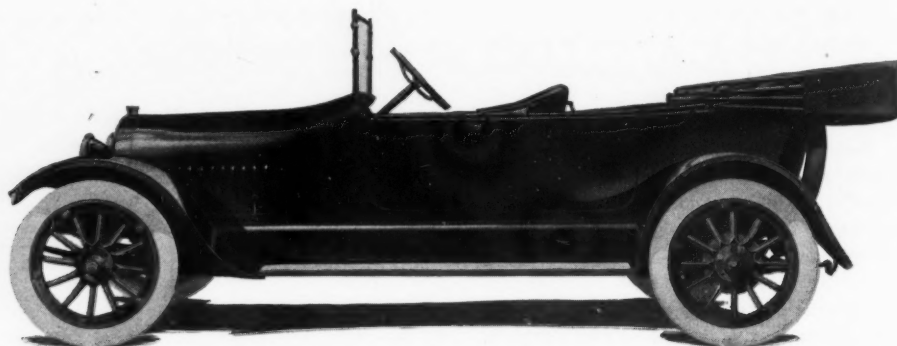
Coincident with the announcement of the car comes the announcement that the plant has been doubled in size.

CHICAGO TRAFFIC SIGNALS

Chicago, May 9—Several readers of Motor Age have called attention to an error that occurred in the tabulation of traffic rules and regulations, with relation to traffic signals in Chicago, in Motor Age of April 20. The whistle signals for traffic to proceed at crossings in this city are,



Left side of Crow motor



The five-passenger Crow which lists at \$725

correctly, one blast for north and southbound vehicles to proceed and two blasts for east and westbound vehicles to proceed. These were reversed by mistake. The feasibility of adopting a block system of semaphore signals in the business center of the city is being considered by the Citizens' Traffic and Safety Commission and some members advocate an ordinance authorizing the step. The scheme proposed contemplates an automatic system under which north and southbound traffic would proceed simultaneously at all crossings, while traffic going in an easterly or westerly direction would be halted, and vice versa.

SIX-CYLINDER PRIORITY

In the Readers' Clearing House department in a previous issue of Motor Age a statement was made that the first six-cylinder car in America to be regularly manufactured for the market was the Stevens-Duryea. Investigation, however, seems to show that while the Stevens-Duryea six was brought out in 1905, it was not put on the market until 1906, whereas the first National six was shipped in September, 1905. Consequently it seems certain that the National's claim to priority is sustained.

SPRING FEVER STRIKE AT RAYFIELD

Chicago, May 6—If it had not been for a parade of striking workmen from the Chicago factory of the International Harvester Co., a strike of the employees of the Findeisen & Kropf Mfg. Co., makers of motor car accessories, would not have occurred, according to the management of the firm. The Harvester strikers marched past the plant of the accessories manufacturer on the afternoon of May 4. The parade was witnessed by workmen employed by the Findeisen & Kropf company and is said to have been the incentive for a walk-out of the night shift at that factory only a few hours afterward. The management declared it was a spring-fever strike. They join others in blaming the unusually high wages which the munitions industries are able to pay during the war for creating labor unrest. Their men demanded a 9-hour day with 10-hour pay and 10 per cent increase in wages. Both demands were granted. The orders on the books of the company, the officials declare, would not permit of cessation of production and the demands were met in order to avert a shut-down. The 1,000 workmen who went out are employed in the carburetor department.

ILLINOIS PLANS GOOD ROADS DAY

Bloomington, Ill., May 5—The third annual good roads day will be commemorated by Governor Dunne and other members of his official family on May 19, taking a trip over the Illinois Valley way from Chicago to Peoria, following the Illinois river as closely as possible.

first annual good roads day trip was made by Governor Dunne 2 years ago over the Lincoln way from Chicago to Sterling. The second tour was made last year over the Dixie Highway, Chicago to Danville. The Illinois valley was recently characterized by the state executive as being equal in scenic beauty to the River Rhine or the valley of the Shannon.

Ten-minute stops will be made at the principal towns along the trail and brief talks will be given by Governor Dunne

to citizens and school children. The route between Chicago and Peoria will be marked for the entire distance with concrete poles which will be erected during the coming summer. These poles will be of spun concrete with steel frame, 100 poles for each county. The Illinois Valley route is said to be the most picturesque east of the Rocky mountains. It crosses the Illinois river at Ottawa, goes via Starved Rock and Deer Park, and thence to Peru and Spring Valley.

Standard-Detroit Tractor at \$1,065

Uses Valve-in-the-Head Motor—All Working Parts Inclosed

AFTER two years of experimentation a tractor, built of standard parts, is being placed upon the market by the Standard-Detroit Tractor Co., Detroit, Mich. The tractor has been tested on farms in the vicinity of Detroit and has proven durable, economical and highly efficient. It does the work of several horses while the cost of upkeep is comparatively much less than that of teams, according to George S. Jacobs, manager of the company and designer of the tractor.

The Standard-Detroit tractor has been built largely along motor car lines. Doubtless the fact that many officers of the company are identified with the motor industry has had this noticeable effect in the construction of the tractor. The president of the Standard-Detroit Co. is M. L. Pulcher, vice president and general manager of the Federal Motor Truck Co., while Thomas E. Reeder, president of the Federal Motor Truck Co., is a director. Another director is A. R. Demory, vice-president of the Timken Roller Bearing Co.; Charles F. Mellish is vice-president of the Tractor company; Frank G. Jacobs, secretary; L. W. Goodenough, treas-

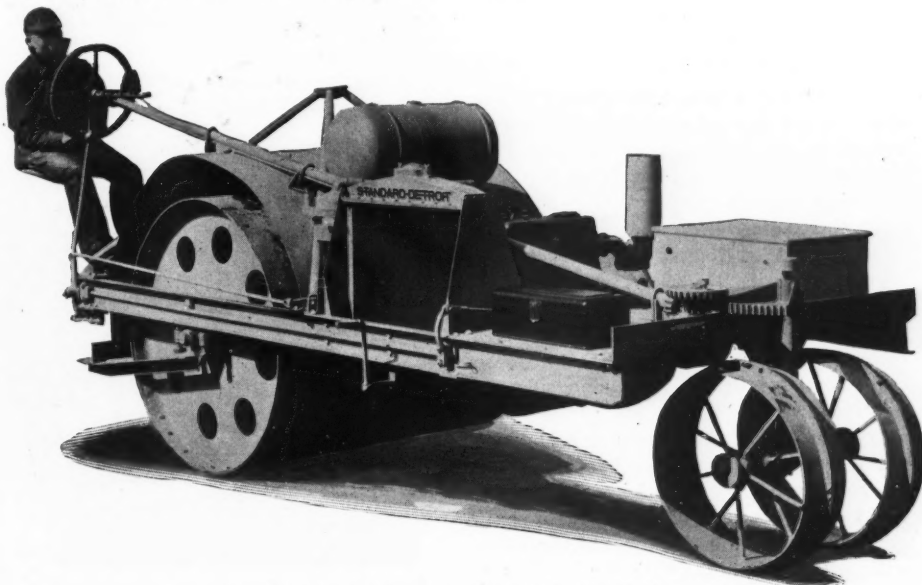
urer; and E. P. Hammond, president of the Gemmer Manufacturing Co., is a director.

The Standard-Detroit tractor weighs 3,900 pounds, has a draw-bar pull of 2,000 pounds and sells for \$1,065.

Valve-in-Head Motor

The radiator is unusually large for a motor which develops 10 to 20 horsepower. It is of cast tank type which, although more expensive, is rugged and easy to repair when damaged by accident. The motor is of the valve-in-head type. All moving parts are enclosed, which eliminates largely troubles ensuing from dirt and grit. The motor, clutch and gearset are built into one self-contained unit, oiled entirely from the engine. All of these parts are inclosed and so hung from the frame that no misalignment of the bearings can occur.

Only three controls are used in the complete operation of the tractor, which has a speed of 2½ to 3 miles per hour. One hand lever is used for all ordinary work and it automatically disengages the gears and throws in the clutch for belt work.



Standard-Detroit tractor, which sells for \$1,065



The Accessory Corner



Danver's Brake-Rod Support

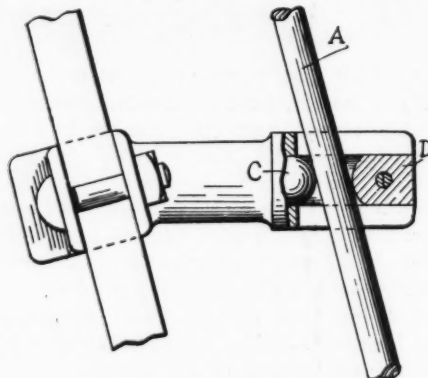
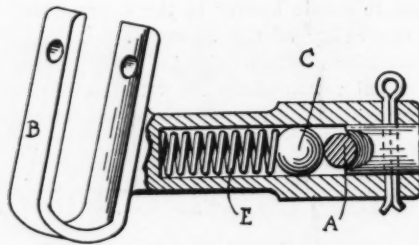
A PATENT has been issued to Andrew C. Danver, Pawtucket, R. I., on a brake-rod support having as its essential feature a round bearing C, mounted against a spiral spring B, and a plug or stop with a convex face against which the brake-rod F rides, the rod being held firmly in position by the pressure of the spring B. The device may be attached without disconnecting the brake-rod, and is said to prevent rattling. The diagram illustrates how it is attached to the torsion rod.

The Improved Lectroflater

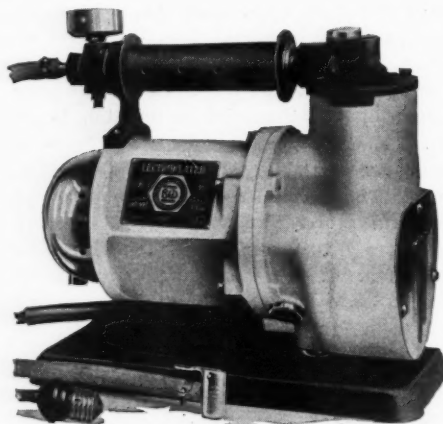
The Black & Decker Mfg. Co., Baltimore, Md., has recently brought out a new model Lectroflater known as Type B, embodying a number of improvements on the tire inflating machine brought out by it about a year ago. The Lectroflater is an ingenious combination of a universal electric motor that will run on either alternating or direct current, a high-pressure air compressor, a gear box and a condensing chamber so arranged that all elements are inclosed in a single housing, and are automatically cooled by a patented cooling system that requires no liquid of any kind. It can be connected to any lamp socket. It is light in weight and is fitted with a long electric cord, a hand grip, high pressure gauge, hose and quick-acting coupling. No. 1 size lists at \$45 and is particularly suited to private garages. No. 2 lists at \$75, has 2½ times the capacity of No. 1, and is intended for public garages, tire sales rooms, etc. These machines are also furnished for mounting permanently on the wall. No. 2 is also furnished mounted on a light, seamless steel tubular carriage, having large diameter wheels and tool tray; suitable for rolling around public garages and other public places. This outfit lists at \$80.

Evenlite for Ford Users

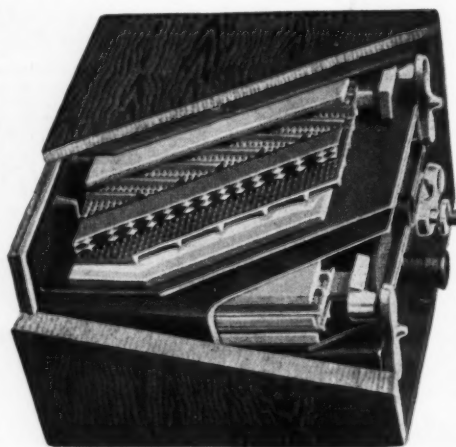
The Evenlite special headlight for Fords equalizes the flow of current to the lamps, regardless of engine speed, and so corrects the tendency of the lights to burn dim when turning corners at slow speed or when the engine is running slowly. This is a product of the St. Louis Electrical Works, St. Louis, Mo. Two types of Evenlite systems are offered; one the post type, which attaches to the steering post and a second, the hood type, which attaches to the dash beneath the hood alongside the lighting switch. Lamps are packed with every outfit and they are not sold without lamps. The post type has two coils; the hood type has one coil. In the former the two lights are independent of each other and should one burn out the other will not be affected. With the hood type, if one lamp burns out, the other receives



Danver brake rod support



Improved Lectroflater, which is portable



Cutaway view of the Northwestern storage battery

the full current of the two lamps. The post type is fitted with a switch which will turn the lights on, dim them or cut them out. If it is desired the button for the electric horn may be placed in the top of the control. The post type sells for \$6; the hood type for \$4.

Northwestern Storage Batteries

These storage batteries are the product of the Northwestern Storage Battery Co., Milwaukee, Wis. The patented Northwestern double grid, which is almost twice as thick as the ordinary positive plate, distinguishes these batteries. The negative plate is made of the special Northwestern staggered grid, so constructed that it is claimed blistering is entirely prevented. The separators are made of hard rubber, strongly ribbed on one side to prevent the positive plates from buckling. The 6-volt 90-ampere battery weighs 45 pounds and lists at \$32.

Duplex Cantilever Spring System

A new type of auxiliary spring for Ford cars has been developed in the Duplex cantilever spring, an accessory which is being put on the market by the Duplex Cantilever Spring Co., Chicago. Upon each end of both front and rear springs, one of the Duplex springs is fastened, the upper end being secured at about half the distance to the middle of the standard Ford spring; the lower end under the front spring is attached to the present Ford perch and the front spring suspended from the Duplex spring, producing a cantilever action. This is said to eliminate side-sway and promote easy riding of the body. The rear Duplex springs attach to the perch in the same manner and add 5 inches to the span of the ordinary Ford spring. A set costs \$15.

Tire Wrapping Machine

Roy G. Rossman, Seattle, Wash., is marketing a tire-wrapping machine which has the advantages over the hand method of wrapping in doing the work more tightly and quickly. Its operation does not require a skilled workman nor call for great strength; an even tension may be obtained at all parts of the tire of any desired amount; the tread rubber is forcibly applied to the carcass of the casing and the raw gum is firmly compressed so that the finished tread is compact and wear-resisting. The price is \$75.

Lynn Wash Stand Floor Trap

The Lynn Stall Co., Lynn, Mass., sells a wash stand floor trap which overcomes the tendency in the ordinary type of trap to allow the sediment washed from the cars to settle in it and gradually fill it up. In the Lynn trap this difficulty is met by providing a sediment cup into which the water drains directly from the

floor. Most of the dirt remains in this cup and comparatively clean water overflows into the bottom of the trap and from thence to the sewer. This cup, as well as the floor grating above it, are hinged so that it is but a moment's work to empty the contents of the cup. No. 1 size, selling at \$15, has 3-inch outlet. No. 2, \$50, is similar but with polished brass top grate. No. 3, \$30, has twice the capacity as No. 1, No. 4, costing \$70, is the same as No. 3, but with polished brass top grate and frame.

Universal Hydrocarbon Gas Producer

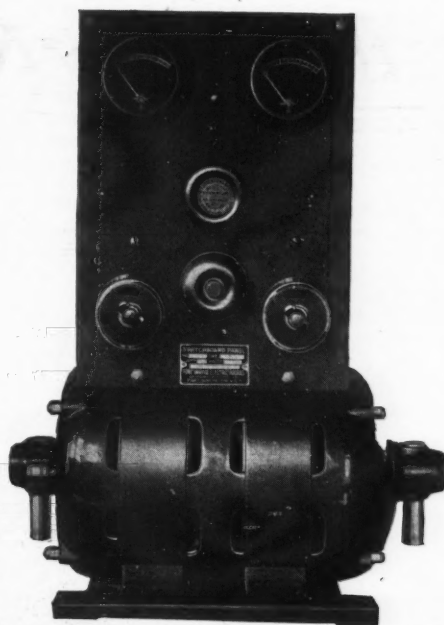
The Universal Oil Converter Co., Long Island, N. Y., makes the Universal hydrocarbon gas producer, a kerosene and alcohol converter adaptable to stationary and tractor engines, the models in stock being made for the following gasoline engines: General Electric gasoline-electric generating sets; Gas Engine & Power Co. and Chas. L. Seabury Speedway; Loew Victor; Electric Wheel tractor; Globe-Penn.; Palmer; Gray. The section of the engine draws kerosene or denatured alcohol into the gas producer chamber through an atomizer, and as it passes through the gas producer, it is heated by the exhaust gases passing through the exhaust manifold outlet which is incased within the producer. Air is admitted in quantity not sufficient to produce an explosive mixture and forms a vapor which passes to the gasoline carbureter, where the correct mixture for the engine is formed. This producer is said to be the result of years of experiment with more than 1,000 models which have been tested on the engines of thirty-six manufacturers of gasoline motors.

Butler Round Ruf Metal Garages

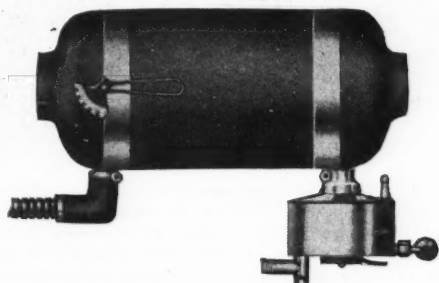
The Butler Mfg. Co., Kansas City, Mo., which for several years has manufactured metal garages, now builds these structures with sides and ends straight and the roof rounded in a semi-circle, a pattern adopted because it allows the use of a minimum of material and reduces the cost. The body and ends are of No. 24 gauge sheets heavily corrugated and constructed in sections. The garages may be enlarged by the addition of new sections. A garage 10 feet wide by 14 feet long, with door 7 feet wide by 7.2 high, sells for \$104.50. One measuring 12 feet wide by 14 feet long, with door 8 feet by 8 feet, costs \$119; garage 14 feet by 14 feet, with door 9 feet high by 8 feet wide, costs \$155; garage 16 feet wide by 14 feet long, with double door 8 feet by 13 feet, costs \$172.

Fold-Up-Door for Small Garages

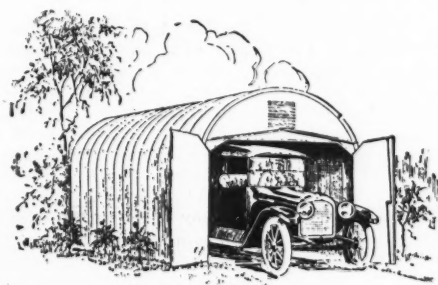
A door which folds up overhead and overcomes the inconveniences of swinging doors in garages where space is limited, is sold by the St. Louis Fire Door Co., St. Louis, Mo. It operates with chain and hoist and can be raised by a child, says the manufacturer. Choice of wood or metal is allowed. A small, hinged door in the panel of the lower section permits of passage without opening the large door.



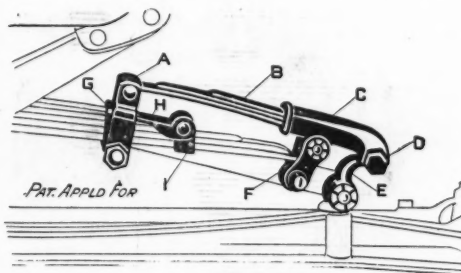
Fort Wayne battery charging outfit designed for garage use



Universal hydrocarbon gas producer for converting kerosene and also oil into proper fuel



Butler Round-Ruf metal garages



Duplex cantilever spring system for Fords

The upper section is built with wire glass panels. It is known on the market as the Fold-Up-Dor.

United States Jacks

The United States Mfg. Co., Mansfield, O., lists three styles of jacks, one being

a tire saver made in two sizes, the smaller having an adjustment of from 11 to 18½ inches, for pleasure cars, and the larger an adjustment of from 12 to 20 inches, for heavy pleasure cars or trucks. The lever is so arranged that when the jack is raised it is automatically locked. The unique No. 2 jack is a malleable iron design for heavy pleasure cars and has an adjustment of from 9½ to 17 inches. It requires about 30 pounds' pressure on the end of the handle to lift a heavy pleasure car. No rivets are used in its construction and screw holes are provided so that it may be mounted on a large block of wood for stability. The Unique No. 1 jack is similar in design to the tire saver and is recommended for cars weighing up to 2,500 pounds. It has an adjustment of from 9½ to 17 inches. They are listed at \$14.

American Chain Jack

In the April 27 issue of Motor Age on page 45 was given a description and an illustration of a jack made by the American Chain Co., Bridgeport, Conn. The caption under the illustration gave the inference that this jack was used for the purpose of putting on Weed chains, but such is not the case. The chain is simply a part of the jack, and it may be said that no tool is necessary for putting on Weed chains.

Bell Air Valves

Three valves for slipping over the valve stem of the tube when inflating the tire are made by the Bell Brass Mfg. Co., Seattle, Wash. The Evertite is made in ¼-, ⅜- and ½-inch sizes and the enlarged stem and peculiar corrugations make it practically impossible for the hose to be blown off, it is said. The Premier combination consists of an Evertite valve combined with a tire gauge. The Automatic Electric not only registers air pressure but also controls the current which operates the pump motor. Current is automatically switched on when the valve is put over the tire valve stem and shut off the instant it is removed. The Premier sells at \$3, the Automatic Electric at \$8.50, and the Ever Tite valve at \$1.

Small Battery Charging Outfits

Fort Wayne battery charging outfits, made by the Ft. Wayne Electric Works, Ft. Wayne, Ind., are designed especially for service in garages for charging ignition and lighting batteries. These outfits consist of small motor-generator sets on which are mounted small switchboard panels bearing all the switches, instruments, etc., necessary for their control. They are to be connected to the incandescent lighting circuits by means of lamp cord and plug, the motor-generators being supplied for service on 110- or 220-volt, 60-cycle, alternating current circuits, or on 110- or 220-volt, direct current circuits. The motor-generators are supplied to deliver direct current at 12, 18 or 24 volts, such voltages being specifically adapted for charging 12-, 18- and 24-volt batteries.



From the Four Winds



HONEYMOONING ON A TRUCK—When Jack Stuart, a Wichita truck salesman at El Paso, decided to get married, he had the ceremony performed at the salesrooms of the Elliott Garrett Co., Wichita agent at El Paso. G. F. Spence, factory representative of the Wichita, happened along in time to be best man and the master of ceremonies was Otis L. Williams, another Wichita salesman. The bride and groom are shown on the seat of a Wichita truck, starting off on their honeymoon, the bridesmaid being on the running board beside the bride and the groomsman beside the groom, with the master of ceremonies standing on the chassis.

CITY'S License Receipts \$17,000 for Year—Vancouver, B. C., realized \$17,000 from motor car licenses in 1915.

Prize for Photos from Motorists—The Minnesota State Automobile Association has offered a prize of \$5 for the best picture sent in each month by affiliated clubs of points of interest.

To Test Pennsylvania Vehicle Law—Pennsylvania's Motor Federation is said to be preparing to test in the courts the right of the state to collect a tax upon one particular class of vehicles, greater than is necessary to carry on the work of the department regulating the collections.

Indian Maiden Buys Gasoline Steed—Isabelle Craig, a full-blooded Indian girl living on the Umatilla reservation near Pendleton, Ore., is now the proud owner of a Buick car. She is the 18-year-old daughter of Joe Craig, a prominent Umatilla Indian who was recently elected secretary of the American Federation of Indians.

County Issues 3,457 Licenses—During the fiscal year just closed 3,457 motor licenses were issued by the county clerk of Dallas county, Tex. This shows an average license of 287 per month, or seventeen per day. The record it is believed is the greatest of any southern county. Because of the law which requires all Texas counties to issue these licenses there can at this time be compiled no figures that will show the number of cars in Texas.

Defies Sunday Law on Gasoline Sales—Georgia can bar alcohol for 7 days in the week, but an attempt to keep gasoline out for 1 day is about to provoke a warm fight

in Waycross, Ga. The fight has been precipitated by the action of a self-authorized official of the Civic League, an organization of exclusive membership, in warning the proprietor of a small restaurant against selling gasoline on Sunday. Threats of prosecution by the league caused the filling stations to put up Sunday closing signs several months ago, but the restaurant-owner has refused to obey this order. The filling stations are becoming restive and are considering re-opening. There is considerable talk of the Chamber of Commerce

or of the citizens in general expressing an organized protest against dictation to business firms by an individual or organization.

Minnesota Registration Exceeds Record—The motor vehicle registration of Minnesota has reached 100,000, which passes all former records for that state.

Association Frames Traffic Ordinance—The Montgomery Automobile & Accessory Dealers Association, Montgomery, Ala., has framed a traffic ordinance which is to be submitted to the city commissioners with a request that it be passed and closely carried out. Representatives of the local organization have condemned the present traffic code as archaic.

Flowers Given to Women Drivers—A. R. Davis, of the Davis Motor Car Co., Studebaker dealers at Cleveland, O., inaugurated a plan 3 years ago of presenting every woman who drove a Studebaker car in Cleveland with an Easter plant, at which time only six plants were distributed. This year Mr. Davis, in pursuance of the same policy, distributed about 200 plants.

Large Registration in California—Motor car registrations for 1916 in California already exceed the total registration for any preceding year. There are now 167,701 cars registered, or 4,000 more than the 1905 totals, and new cars are being put in operation at the rate of 2,000 per week. The motor car tax gross is \$1,736,160. The total collections are \$1,824,626.

Must Have Light on Side Car—The New Jersey legislature has decreed that motorcycle side-cars must be equipped with a white light showing at least 200 feet ahead

Coming Motor Events

CONVENTIONS

May 19—A. A. A. annual meeting, Washington, D. C.

June 12-16—S. A. E. annual cruise, Lake Huron and Georgia Bay.

TRACTOR DEMONSTRATIONS

July 17-21—Dallas Tex.

July 24-28—Hutchinson, Kan.

July 31-Aug. 4—St. Louis, Mo.

Aug. 7-11—Fremont, Neb.

Aug. 14-18—Cedar Rapids, Ia.

Aug. 21-25—Bloomington, Ill.

Aug. 28-Sept. 1—Indianapolis, Ind.

Sept. 4-8—Madison, Wis.

of the machine. This makes motorcycles with side-car attachments carry two headlights the same as motor cars. The regulation was demanded because of the danger of other vehicles colliding with a side-car that would not otherwise be seen.

10,000-Mile Golden Wedding Tour—Mr. and Mrs. W. L. Lyon, Los Angeles, Cal., who will celebrate their golden wedding anniversary in this city on November 14th, left Los Angeles last week in a Winton six on a 10,000-mile transcontinental honeymoon. Their machine was equipped with many accessories of light housekeeping, including a refrigerator and collapsible beds. Although 70 years old, Mr. Lyons expects to do his own driving throughout the trip.

Good Roads Activities

Roads Association to Incorporate—The Good Roads Association of Wisconsin, recently organized at a meeting, in Milwaukee, Wis., of good roads enthusiasts from all parts of the state, has decided to incorporate and will perfect its organization as soon as the charter is received.

Propose New Route into Yellowstone—The Gallatin-Yellowstone Park Highway Association has been formed at Bozeman, Mont., to get federal funds to build a motor highway through the West Gallatin canyon to the Yellowstone national park.

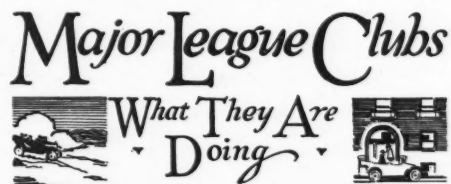
To Establish Illinois Roads Division—The Chicago, Kansas City and Gulf Highway Association will meet May 11, at Davenport, Ia., for the purpose of organizing the Illinois division of this highway and to get the good roads boosters of Illinois and Iowa better acquainted.

Columbus, O., Approves Bond Issues—Motorists of Columbus, O., endeavored to have several proposed bond issues for the repair and maintenance of streets and bridges in Columbus approved at a special election held last week. They were successful in securing the passage of only four out of the nine proposed bond issues, and two were especially backed by motorists.

Old Spanish Trail Shows Progress—Work on the Old Spanish Trail, the east-and-west highway to run along the southern part of the country, is proceeding with a rapidity that insures its completion at an early date. In the west, California will build a concrete

highway from San Diego, Cal., to Yuma, Ariz. One county is spending \$300,000 on its link. Arizona will build its part by convict labor. The road between Phoenix and El Paso, Tex., is stated to be in very good shape. Edward Fletcher, one of the directors of the association, recently covered 406 miles in 21½ hours.

Passenger Agents on Dixie Route—The Central Dixie Highway Association, which is promoting an air-line from Macon, Ga., to Jacksonville, Fla., by way of Waycross, Ga., is systematizing its promotion work along lines similar to railroad organization. Isadore Gelders, of Fitzgerald, Ga., is the General Passenger Agent of the road and he is assisted by division superintendents



Automobile Club of Buffalo

What It Did in 1915—In the early part of the year its law and ordinance committee succeeded in defeating more than fifteen bills introduced in the state legislature; measures which were obviously unnecessary, and in most cases unfair to the car owner. It brought about safer night travel on the highways of New York by the passage of the law compelling all vehicles to carry lights at night. Did much for the improvement of highways in Erie county and carried on a membership campaign in which 800 new members were elected, bringing the total to 3,600. Each year the club erects from 500 to 1,000 road signs in the territory around Buffalo. The usual outing of 4,000 orphan children was given in June and the motor car gymkhana during the fall.

What It Plans for 1916—A more strenuous membership campaign along more extensive lines will be attempted. It also is planned to arrange a mass meeting for car owners for the purpose of determining a line of action that will tend to lower the price of gasoline.

A country clubhouse on a 35-acre tract 17 miles from the business center of Buffalo is maintained. This feature represents an investment of approximately \$80,000 and is now in its sixth year.—Dai H. Lewis, Secretary.

and traveling passenger agents. A publicity bureau has been established at Waycross, Ga. There is a demonstration agent for each county and there will be a chief engineer. The system is proving highly effective.

Anti-Rut Crusade is Started in Ohio—The task of teaching Ohio motorists and drivers of other vehicles how to prevent ruts being formed in the roads, this by properly observing the condition of the road surface and driving accordingly, has been undertaken by State Highway Commissioner Clinton Cowen. Placards will be posted along the most generally used routes of travel. It is believed that the life of a roadway may be prolonged considerably if the campaign accomplishes its purpose.

With the Motor Clubs

Motor Club Urged for Ohio City—Following the success of local sportsmen in organizing a yacht club at Port Clinton, O., efforts are being made to organize a motor club which promise to meet with favor.

Club Building Under Construction—The Automobile Club of Maryland has begun the erection of a three-story fireproof club building at Baltimore, Md., at Mount Royal avenue and Cathedral street, on a site 53.2 by 82 feet. The structure is to cost \$60,000.

Louisville, Ky., Club Holds Election—Officers were elected at the annual meeting of the Louisville Automobile Club, Louisville, Ky., as follows: Otis W. Pickrell, president; George P. Kendrick and Dr. Harry R. Kettig, vice-presidents; Dr. J. W. Clark, secretary; Frank I. Dugan, treasurer.

Club Charters Gasoline Tank Wagon—Prior to starting on a tour of Monroe county, Pa., on Good Friday, the Monroe County Automobile Club purchased a quantity of gasoline at reduced prices and distributed it at a saving under the market price among the members taking the trip. A tank wagon was engaged for the occasion.

Membership Week in Minnesota Clubs—Membership week with the Minnesota State Automobile Association is to be the week beginning May 15. Each club is to put on the campaign individually. A luncheon meeting is to precede the campaign, at which club members are to be divided into small groups with lists of car owners who are non-members to work upon.



REMOVE DANGEROUS S-TURN—One of the most commendable pieces of construction carried out by Connecticut Highway Commissioner Charles J. Bennett since he went into office is the elimination of the dangerous Wethersfield S-turn in the town of Wethersfield and on the road to Long Island Sound. It is the policy of the state highway commission to eliminate dangerous turns wherever possible. In this particular instance the commission was blocked from the start by the owner of a tract of land through which the commission wanted the right of way. The commissioner made an award of damages which did not prove satisfactory to the owner.



However, the commissioner virtually was sustained by a committee of the superior court. The stretch in question, which is nearly straight, is 1,044 feet in length and is fenced in on each side. There is now a clear view down the road, whereas under the old conditions the motorist who entered one end of the S-turn could not see out the other end because of a house which stands in the center of the S. The original road is still open to afford access to the houses along it but is very seldom used by general traffic. The views above show the new road and the two ends of the old one. At the left is the entrance to the turn and the right is its exit.



Among the Makers and Dealers



AN ITALIAN TORPEDO MOTOR CAR—The accompanying illustration shows a remarkable torpedo motor car developed at Milan, Italy, by Conte Marco Ricotti and is being used in Lombardia. It is capable of making a speed of 85 miles per hour and yet is equipped with only 50-horsepower motor. The gasoline engine, with cylinders 110 by 160 millimeters, drives the car at a speed of 75 miles per hour without difficulty and Conte Ricotti claims that with the same design of torpedo motor car with a motor of greater capacity even higher speeds than those mentioned readily can be accomplished. The peculiar shape of the car reduces the wind resistance to a minimum and this is a great factor to be considered in high speed motoring. There are three large glass covered openings in front and four round and oval openings on each side of the car.

HUPP Branch Men at Detroit—Hupmobile branch and district managers held their semi-annual meeting during the closing week of April at Detroit, Mich.

Convention of Hyatt Managers May 18—The managers of the service branches of the Hyatt Roller Bearing Co. will gather at the general sales offices at Detroit, May 18-20, for their first annual convention.

B. W. Collins with Springfield Body Co.—B. W. Collins, Detroit, Mich., formerly assistant treasurer of the old Lozier Motor Co., and for some time connected with the United States Tire Co., has been appointed assistant treasurer and assistant to the president of the Springfield Body Co.

C. R. Short Becomes Northway Engineer—C. R. Short, Detroit, Mich., former engineer for the Russell Motor Car Co., Toronto, Ont., has assumed the duties of chief engineer of the Northway Motor & Mfg. Co., at Detroit, succeeding E. G. Gunn, who recently resigned to become chief engineer for the Premier Motor Corp., Indianapolis, Ind.

Hearing for Monarch Creditors, May 9—The first meeting of the creditors of the Monarch Motor Car Co., which was adjudicated bankrupt by Lee Joslyn, referee in bankruptcy for the eastern district of Michigan, April 24, was called for May 9, at which time creditors were requested to appear and prove their claims. The company's liabilities are set at \$5,753.03 and the assets at \$20,833.15.

Ohio Motor Body Has 10,000 Members—According to reports made at the annual meeting of the Ohio Automobile Association at Akron, O., recently, there were 10,844 members in good standing March 31, 1916.

This number included the paid-up membership of thirty-nine local clubs. The largest membership affiliating with the state association is the Cleveland Automobile Club, with 4,474 members.

Haynes Company Adds to Plant—A new 3-story paint shop has recently been completed at the plant of the Haynes Automobile Co., Kokomo, Ind., to facilitate the production of the Haynes cars.

Seamless Tube Makers Buy Site—The Detroit Seamless Steel Tubes Co. has acquired a tract of land of 12 acres at Fort and Waterman Sts., Detroit, Mich., on which it intends to erect a new and larger plant for the manufacture of its product.

Locomobile Co. Elects Officers—The directors of The Locomobile Company of America, in Bridgeport, Conn., recently elected officers as follows: Raymond K. Albright, president; Andrew L. Riker, vice-president; James T. Roche, vice-president; Frank R. Hickman, secretary and treasurer.

Overland Buys Connecticut Property—A real estate deal involving \$39,500 in which the Willys-Overland Co., Toledo, O., figures as purchaser, was consummated at Hartford, Conn., last week. The motor car company acquired a tract of land at the corner of Asylum and Hurlburt streets on which will be erected a 3-story concrete and steel service station and salesroom.

Northwest Buick Co. Is G. M. C. Distributor—One of the most important transactions in the commercial vehicle line ever made in the Pacific Northwest was recently consummated between the Northwest Buick Co. and W. H. Barnes, factory representative of the General Motors Co., whereby the Buick com-

pany will handle the entire truck line of the General Motors Co. throughout their territory, covering the states of Oregon, Washington, Idaho, British Columbia and Alaska.

Fisk Opens Export Office—The Fisk Rubber Co. of New York has opened offices at 11 Broadway, Bowling-Green building, New York, for the handling of its export trade.

Premier Employs Cartoonist-Writer—Homer McKee, known to newspaper readers as a cartoonist and writer, but who for the last 5 years has concentrated his efforts on motor car advertising, has become director of advertising for the Premier Motor Corp., Indianapolis, Ind.

New Electric Furnace Soon Ready—The Harrow Spring Co., Kalamazoo, Mich., is pushing to completion the additions to its plant, and it is contemplated that the new electric furnace equipment will be in operation within 3 weeks. A 10 per cent wage increase was recently made to the 200 employees of the concern.

Schwartz Resigns from Metz—W. H. Schwartz, sales manager of the Metz Motor Car Co., Waltham, Mass., since 1909, has resigned his position. He will rest for some months and then enter business for himself. While he does not admit it there have been rumors that prominent men in the West want to back him to produce a car in one of the big motor centers.

Tag Ordinance Rigidly Enforced—Motor cars no longer may be driven under their own power on the streets of Portland, Ore., without a tag. Hereafter dealers must display tags in driving cars from the depots to the warehouses or to storerooms. Out-of-town purchasers must procure a temporary

tag at police headquarters or be escorted to the city line. Visiting tourists, however, are immune from the law which requires that cars must not be left longer than 30 minutes in front of buildings in the congested district.

Arms Producer Makes Transmission—The Lefever Arms Co., Syracuse, N. Y., has just placed a contract for a large addition to its plant to take care of future additional production of transmissions and transmission gears.

Ideal Wheel Co. Increases Capital—The Ideal Wheel Co., which operates a factory at Massillon, O., where steel wheels for motorcycles, motor cars and aeroplanes are manufactured, has increased its capital stock from \$50,000 to \$150,000.

Chevrolet Sales in Canada Climb Up—The Empire Motor Co., Calgary, Alta., agents for Chevrolet, report sales to date of more than thirty carloads. That there is a demand for a low-priced car in Canada, is much in evidence from sales records of the various agencies throughout the Dominion.

Westcott Removing to Ohio—The Westcott Motor Car Co., Richmond, Ind., will remove to Springfield, O., according to announcement made by B. J. Westcott, one of the principal owners of the company. A deal has already been started for a site in Springfield. Approximately 400 persons will be employed by the plant.

Delco Names Distributor—J. J. Munsell, Dayton, O., soon is to assume the duties of general agent in the Columbus, O., district for the new Delco product, Delco-light, which is made by the Domestic Engineering Co., Dayton, O. The Domestic Engineering Co. was incorporated recently. The management is the same as that of the Delco.

F. A. Wade Resigns from Maxwell Position—Fred A. Wade has resigned as purchasing agent of the Maxwell Motor Co. His future plans have not yet been announced. Mr. Wade's long connection as purchasing agent of the Ford Motor Co., E-M-F Co. and Studebaker Corp., at different times, has made him one of the prominent men of the field.

Decatur, Ill., Is Motor Car Center—Decatur, Ill., is claiming prestige as the leading motor car distributing point of central Illinois. A building is being erected, which is designed for a sales agency and repair shop, making fifteen concerns located within a radius of 3 blocks, all handling motor cars. Practically every dealer in the city has sub-agencies in towns within a radius of 30 miles. All report business at high tide.

Ahlberg Bearing Co. Opens Branches—The Ahlberg Bearing Co., Chicago, announces the opening of factory branches on the coast at San Francisco, Cal., and Portland, Ore., and the installation of an auxiliary regrinding plant at Los Angeles, Cal. The new branches at San Francisco and Portland complete a chain of eleven factory branches in New York, Boston, Detroit, Cleveland, Minneapolis, St. Louis, Portland, Atlanta, Los Angeles, San Francisco and Chicago.

School for Service Men—The Olds Motor Works has established a permanent school for Oldsmobile service men at its plant in Lansing, Mich. The first meeting recently was attended by over 200 service men connected with Oldsmobile dealers in all parts of the United States. The school will establish a standard method of doing various work on cars, such being the result of accurate time studies of different operations made by the factory experimental department.

Federal Rubber Doubles Capacity—B. H. Pratt, general manager of the Federal Rubber Mfg. Co., Milwaukee, Wis., with works at Cudahy, Milwaukee county, has announced that contracts have been awarded for the erection of three large new structures, which will practically double the capacity. Ground will be broken as soon as

final details are arranged. The Federal company recently passed into the control of the Fisk interests of Chicopee Falls, Mass., as reported in Motor Age at the time.

Specialize in Motor Car Glass—The Capital Glass Co., has begun operations at Lansing, Mich., and will specialize in motor car glass.

Defunct Firm Pays 10 Per Cent—A second dividend of 10 per cent, amounting to \$25,420.55, has been declared in favor of creditors of the defunct Milwaukee Motor Co., Milwaukee, Wis.

Promotes Assistant Purchasing Agent—Roy M. Hood, former assistant purchasing agent of the Maxwell Motor Co., Detroit, Mich., has been appointed purchasing agent of the company.

Auto Twin Bed Co. Is Formed—The Auto Twin Bed Co., Moline, Ill., has been organized and articles of incorporation sought. George Tuffley, the inventor, is general superintendent and P. A. Merriman, sales manager. The office of the company is at 2214 Seventh Avenue, Moline, Ill.

To Enlarge Wire Wheel Plant—The O. A. Zarth Wire Wheel Co., Aurora, Ill., is seeking larger quarters, having just secured an order for 100,000 sets, and many other smaller orders. The Zarth wheel has several new features, particularly the method of attaching the spokes to the rim, and the lock which holds the removable wheel to the axle. The spokes are screwed into the rim, a new departure and which is said to make the joint permanent.

Chevrolets at Bay City—The Chevrolet Motor Co. of Bay City, Mich., has been formed as a result of the recent purchase of two local plants, owned by the National Cycle and Manufacturing Co. and the National Motor Truck Co., the latter making the Natco truck. The directors are H. B. Smith, W. C. Durant, F. C. Finkenstaedt, A. B. C. Hardy and W. R. Willett. The latter, who is factory manager, was formerly with the Gemmer Manufacturing Co. The plants will be used for motor manufacture, which is expected to commence in about sixty days. Eventually the complete assemblage of Chevrolet cars will be undertaken. The buildings, which comprise nearly five

and one-half acres in floorspace, are now being remodeled. The company will turn out about 100 motors a day.

L. C. Curl Joins Continental—L. C. Curl has been appointed purchasing agent for the Continental Motors Co. plant, at Muskegon, Mich. He was formerly purchasing agent for the Buda company, Harvey, Ill.

Truck Firm Sells Its Plant—Stockholders of the Lauth-Juergens Motor Truck Co., Fremont, O., have voted to dispose of the plant to the H. G. Burford Co. The new company will take over the plant and assets of the company and assume all liabilities against the concern.

D. K. Moore with Vim Truck Company—D. K. Moore has been appointed assistant general manager of the Vim Motor Truck Co. of Philadelphia, Pa. Mr. Moore was formerly sales manager of the Weston-Mott Co., of Flint, and for 5 years president of the American Distributing Co. at Detroit, Mich.

Aluminum Factory in Need of Addition—The Werra Aluminum Co., Waukesha, Wis., which specializes in aluminum castings for motor builders, is contemplating the enlargement of its foundry, established 3 years ago in the former Wisconsin Central car shops. The present facilities are not adequate to handle the great volume of business on the books.

Drive-Away Day at Milwaukee, Wis.—Harry Newman, Inc., state distributor of the Chalmers, at Milwaukee, Wis., held its first drive-away day April 24, and 105 dealers from Wisconsin, northern Michigan and southeastern Iowa drove that number of Chalmers cars from the Milwaukee sales-rooms to their respective homes. At noon the cars were lined up, and, accompanied by nearly 100 Chalmers owners from Milwaukee, made a tour of the business district. At the head of the procession was a brass band seated in the big Newman service car, which resembles a police patrol.

Inventor Files Answer to Suit—Attorneys for Archie H. Harris, Akron, O., and the Firestone Tire & Rubber Co., filed an answer to the suit brought against them by the Republic Rubber Co., of Youngstown, O., to



WIRELESS OUTFIT ON A MOTOR CAR—A unique wireless outfit for a motor car has been designed at Toronto, Ont., and is shown in the accompanying illustration. In connection with this installation of Kenneth A. McIntyre for radio communication from motor cars a 1-kilowatt station was used at his house and he was able to keep in touch with the station on the car throughout the country within a radius of between 5 and 10 miles, depending upon the quality of the ground connection. It is stated that the results as a whole were good and the amateurs in Toronto and the government stations at Toronto and Midland were easily heard. However, using the wires as an aerial and the car itself as a grounding condenser did not give good results. The home station could only be heard about 100 yards away, but in case of communication from one car to another this difficulty would be overcome, as the two sets would be more nearly in tune with one another. The portable set consisted of only the fundamental wireless instruments, receiving, Blitzen, loose coupler galena, detector, condenser and phones. The sending set included twelve spark coils, key, twelve dry cells, six and six in series, multiple, stationary spark cap and switch.